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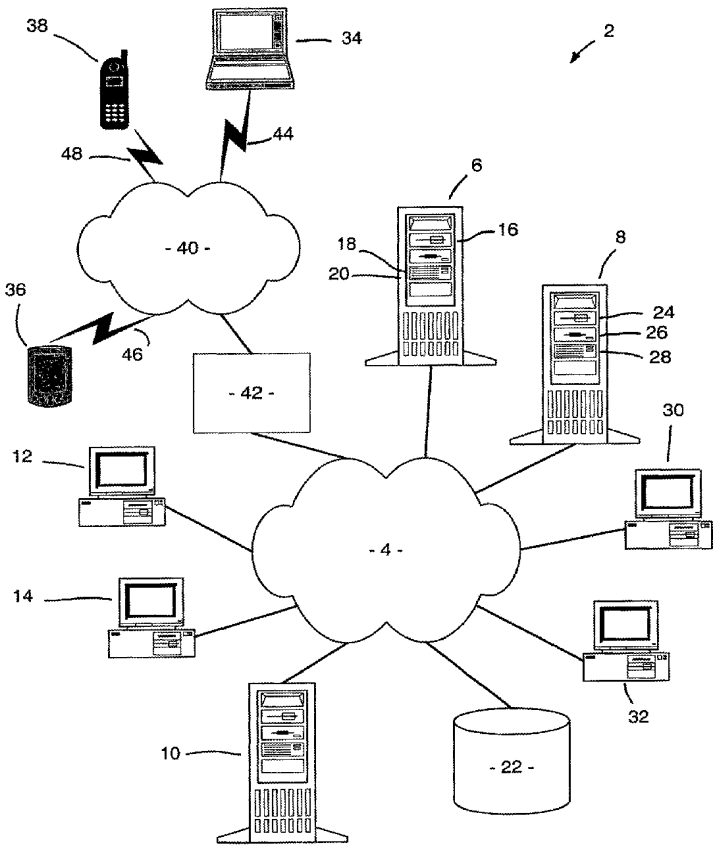

(57) Abstract: A method and system of creating or altering electronic information using a mark-up language in a communications network (4) wherein said creating or altering is performed by one or more authorised users. The electronic information is created or altered using the mark-up language via one or more remote processing terminals using a computer program. The electronic information is then stored in a data storage (22) stored in a hierarchical structure whereupon authorised users have access to the stored information for review and/or approval. Once approved the electronic information is published by an authorised user so that access may be gained to the electronic information, via the Internet or an Intranet. The system also allows for geographically dispersed authorised users to liase with one another in creating or altering the electronic information and approving and publishing the electronic information.

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ELECTRONIC AUTHORING AND PUBLISHING SYSTEM

Field of the invention

This invention relates to a method and system for creating and publishing information, and more particularly relates to a method and system that allows for distributed authoring, reviewing and publishing of information on a communications network, such as the Internet or an Intranet.

Background of the invention

At present, in order to publish or make available information on a communications network, such as the Internet or an Intranet, there are teams of people who are specifically allocated the task of authoring, updating, coordinating, collating, vetting and publishing the information in a centralised manner. For a particular organisation, different parts of the organisation communicate through e-mails, faxes, or even by telephone where the members of the organisations are geographically dispersed. The net effect of this process is that a large number of people are needed in a central team to manage this task and often each team member is under an extreme work load and has deadlines and commitments to meet for each document or piece of information that is assessed for publishing. In publishing for the World Wide Web, typically content information which includes text and graphics is provided by the author to specialists who convert this material to HTML format or other formats, design and layout each web page, process each page to place it on a web site and set the linkages to other web pages. This task is often performed by a webmaster and results in a website which has a rigid structure, generally requiring all processing and updating to be done centrally by the webmaster or alternatively a central team as mentioned before. To change the relationship between pages or the look and feel of the site requires a physical change to each affected page.

The traditional web design approach is not a scalable approach in terms of business approaches. By way of example if a website contains ten times as much information then generally it will take ten times as many resources to

prepare. The associated co-ordination and vetting tasks also becomes progressively more complicated. Thus the key disadvantages associated with this traditional method of content authoring and publishing onto the World Wide Web includes the difficulty in maintaining, modifying and enhancing a site as users' requirements or business requirements change, the need for large numbers of specialist production staff and a lack of responsiveness due to the delay between new information being created and then being made available on the World Wide Web.

The present invention seeks to overcome any one or more of the above disadvantages by providing a method and system that allows authoring, editing, reviewing and publishing of content material in a distributed manner, in the sense that authors, editors and publishers in an organisation may be geographically dispersed and can have access to created documents prior to publication to check that they meet the goals and requirements and legalities set down by an organisation. It streamlines the whole process of publishing onto the World Wide Web and reduces the work load and constraints associated with the abovementioned centralised publishing team. This in turn has particular advantages in terms of reducing the cost for an organisation, streamlining business processes associated with the web content authoring and publishing and management processes and automatically facilitates content management with functions like unpublishing previously published material. Furthermore the present invention allows users with basic word processing skills to create, edit and publish content relative to their area of expertise. It also enables an organisation to maintain a unified and standard look and feel about their website and contents of a website as the authoring and publishing processes take place within a well defined navigational context which is centrally managed.

Thus the system by providing distributed authoring and publishing facilitates appropriate distribution of web authoring, publishing and support roles in a quality managed environment. The distributed authoring or creating within the system separates the content from technology to allow the

appropriate focus of resources, i.e. technical staff on enhancing functionality while content ownership for quality is maintained with the content owner. It also separates documents from navigation to allow them to be presented in multiple places within a navigational structure, in a quality managed environment.

Summary of the invention

According to a first aspect of the invention there is provided a method of creating or altering electronic information using a mark-up language in a communications network wherein said creating or altering is performed by one or more authorised users, said method comprising the steps of:

creating or altering said electronic information using said mark-up language through a processing means and using computer program means;

storing said electronic information in a mark-up language format, said stored electronic information forming a hierarchical structure;

approving said electronic information for publication; and

publishing or otherwise making access available to said electronic information provided that said electronic information has been approved.

The one or more authorised users may be assigned different roles in the method, such as author whereby the author would create or alter the electronic information, approver for reviewing and approving the electronic information and publisher for publishing the electronic information. Each of these roles may be distributed in the sense that each of the authorised users are physically and geographically dispersed to the extent that they are unable to meet or otherwise communicate effectively between each other but still can access the electronic information according to each authorised user's role through individual processor means. A single authorised user may be assigned more than one role as abovedescribed..

Where said electronic information has not been approved, the method may further comprise the step of forwarding to the author the created or altered electronic information for further modification.

The electronic information may be a document, that is existing or new, or the electronic information may be a database in the form of, for example, a website accessed through the World Wide Web. The communications network may be an Intranet or the Internet.

After the creating or altering step, the electronic information may be transmitted and stored in electronic storage means linked to the communications network and may be accessed only by authorised users, such as the approver, author or publisher. The electronic information may be created or altered by a number of authors geographically separated and which authors may communicate amongst each other to produce a final version for publication. The approver and publisher may be different authorised users to the authors.

The electronic information may be stored in a server means that incorporates the said electronic storage means, where said server means is a staging server and authorised users have access by separate processing means upon entry of a suitable identification code and password.

Prior to said publishing step, the electronic information may be retrieved from said electronic storage means or said server means and transmitted to and stored on a further server means, called a publishing server, for access by an approver and/or reviewer and/or publisher. Once authorisation has been obtained for publication, the electronic information may be stored on a website or an Intranet site for access by various members of an organisation or the public.

According to a second aspect of the invention there is provided a system for creating or altering electronic information using a mark-up language in a communications network wherein said creating or altering is performed by one or more authorised users, said system comprising:

one or more remote processing terminals linked to said communications network for providing access to said one or more authorised users so as to create or alter said electronic information in a mark-up language format;

data storage means linked to said communications network for storing the created or altered electronic information in said mark-up language format, whereby the stored electronic information forms a hierarchical structure, to enable an authorised user to approve said electronic information; and

wherein once the electronic information has been approved, said electronic information is published by an authorised user to enable users to access the created or altered electronic information.

The data storage means may be incorporated in a server means that is linked to the communications network and the server means may comprise individual server means, being a first server means which is used to initially store the created or altered electronic information, a second server means for access by authorised users, more particularly an approver and/or publisher.

The one or more remote processing terminals may be enabled to generate requests to access, view and/or manipulate the created or altered electronic information and preferably the remote terminal is a PC or a wireless hand held device such as personal digital assistants (PDA) that use the wireless application protocol (WAP) technology. The server means may convert the stored electronic information into one or more World Wide Web documents to enable the remote terminals or users of the remote terminals to view and manipulate the information over the communications network. Each of the remote terminals may be installed with a web browser for accessing and navigating between the web documents generated by the server means. Preferably the wireless devices are linked to the communications network through a separate cellular telecommunications network.

According to a third aspect of the invention there is provided a computer program element comprising computer program code means to control a server means to execute a procedure for creating or altering electronic information over a communications network using a mark-up language by:

creating or altering the electronic information using said mark-up language through a processing means;

storing said electronic information in a mark-up language format, said stored electronic information forming a hierarchical structure;

processing the approval of said electronic information for publication; and

processing the publishing of or otherwise making access available to said electronic information where said electronic information has been approved for publication.

According to a fourth aspect of the invention there is provided computer program means for directing a processing means to execute a procedure to create or alter electronic information over a communications network using a mark-up language, said computer program means directing said processing means to:

create or alter said electronic information using said mark-up language;

store said electronic information in a mark-up language format, said stored electronic information forming a hierarchical structure, and

process the approval of said electronic information for publication;

wherein further said electronic information is published or otherwise made available to users when said electronic information has been approved for publication.

According to a fifth aspect of the invention there is provided a computer readable memory, encoded with data representing a computer program for directing a server means to execute a procedure for creating or altering electronic information using a mark-up language over a communications network by;

creating or altering the electronic information using said mark-up language through a processing means;

storing said electronic information in a mark-up language format, said stored electronic information forming a hierarchical structure;

processing the approval for publication of said electronic information; and

processing the publishing of or otherwise making access available to said electronic information provided the said electronic information has been approved.

Brief description of the drawings

A preferred embodiment of the invention will hereinafter be described, by way of example only, with reference to the drawings wherein:

Figure 1 is a block diagram showing a system used to create, alter and publish electronic information using a communications network;

Figure 2 is a window showing the opening screen that a computer program displays to assist a user in creating or altering electronic information, such as a folder or web document;

Figure 3 is a further screen requesting a user to enter the folder details;

Figure 4 is a screen requesting the user to identify who will have access to the folder;

Figure 5 is a screen showing colour schemes available for the folder being created;

Figure 6 is a screen that prompts the user to confirm settings for the created site;

Figure 7 is a schematic diagram showing the layout of a typical web page that is to be created;

Figure 8 is the initial screen shown in creating a web page;

Figure 9 is a further screen requesting page details from the user in creating the web page;

Figure 10 is a screen requesting details on page classification;

Figure 11 is a further screen requiring publication and expiry dates from the user;

Figure 12 is a screen requesting the review date or review period from the user;

Figure 13 is a screen showing the options for page templates;

Figure 14 is a block diagram of hardware used in the system showing data flow in creating, publishing and viewing content;

Figure 15 is a screen that allows a user to contact the creator or author of the particular web page;

Figure 16 is a screen confirming the settings that the user has provided so that it is displayed in one window;

Figure 17 is a screen of a document links manager;

Figure 18 is a screen that allows the user to add images to a document;

Figure 19 is a screen that allows an image to be updated in a document;

Figure 20 is a further screen that allows the updated image to be identified in a different category or renamed in a different category;

Figure 21 displays a screen identifying items to be published or pages to be published;

Figure 22 is a screen providing release approval for the document to be published.

Detailed description of preferred embodiments

Referring to Figure 1 there is shown an overall system 2 that is used to enable authoring and publishing of information which is ultimately made available either to the public over a public communications network 4, such as the Internet, or is made publicly available to members or employees of an organisation, typically over an intranet or both. As is well known, the Internet represents a vast number of computers linked to each other world wide and allows information exchange such as e-mail between various computers linked through the Internet using a set of protocols such as the transmission control protocol/Internet protocol (TCP/IP). Information is made available on the Internet to the public through a number of servers which are essentially computers that make available files of documents to be viewed by the public. The World Wide Web (WWW) provides a method of accessing this information from the servers and allows the user to navigate the resources of the Internet by displaying or downloading pages of information that is stored at the servers.

Communication with the servers from remote terminals or work stations use the hypertext transfer protocol (HTTP) which in the Internet, is generally transmitted over TCP/IP. Work stations or remote terminals are able to access the information stored on the file servers by either accessing the Internet directly or accessing a local Internet Service Provider's server through telecommunication networks. Servers provided by the ISPs enable access to other servers within the Internet via backbone service providers and existing telephone networks.

Specifically in the system 2 shown in Figure 1, a first server means 6, referred to as a staging server, a second server means 8, referred to as a production server and a third server means 10, which typically hosts a website of an organisation are all linked to the communications network 4 through appropriate data links. Authorised users to any one of the servers 6 or 8 may connect to those servers through work stations or remote terminals 12 and 14. For example if a user is authorised to create a document they may access the staging server 6 which would typically have a processing means 16, a memory means 18 and a data storage means 20, and be able to create a document to be hereinafter described and thereafter a document will be forwarded to a data storage means in the form of a database 22. The database 22 then updates the second server means 8 as part of the publishing process such that an authorised user, for example on terminal 14 who has access to publish a particular document would access the server 8 which again would typically have a processing means 24, a memory means 26 and a data storage means 28 to view the document. If that document is approved then it is published and transmitted to the server 10 for storage on the website of server 10 so that other users, for example on terminals 30 and 32 may access that website by typing in its URL.

Other remote terminals may be in the form of mobile stations 34, 36 and 38 each connected to a mobile communications network 40 which in turn is connected to the communications network 4 through a gateway, preferably in the form of a wireless application protocol (WAP) gateway/proxy server 42.

The terminal 34 may be a notebook computer, terminal 36 a personal digital assistant and terminal 38 a mobile telephone. Each of these terminals are ideally devices that use the wireless application protocol specification which is a specification for a set of communication protocols to standardise the way in which wireless devices and any other radio transceivers can be used for Internet access including e-mail and the World Wide Web. The WAP enabled devices are designed to work over the mobile network 40 which may be a digital network such as CDMA, GSM, PDC or CDPD to name a few. Each of the terminals 34, 36 and 38 are linked to the mobile network 40 over respective radio links 44, 46 and 48. Prior to describing how member users can create websites and web pages for publication and how such pages may be edited or approved for publication, a brief description will follow regarding the four different membership levels that can be granted for access to the system. Each membership level has a unique level of access that enables a user to perform certain tasks. Overlying the responsibility on each member is the fact that all content that is written and published on the website or for example intranet site abides by the legal, content and useability guidelines of the organisation that owns the website or Intranet site.

A number of levels of membership are provided, one of which is a central co-ordination authority (CCA). As guardians of communication throughout an organisation the CCA has implicit authority over the information and content of the website/Intranet site and the "business unit feel" of sites that fall within the area of responsibility or throughout the whole website/Intranet site.

The CCA liaise with folder administrators, another level of membership, to ensure content quality and the continuous improvement of the content provision. Specifically the CCA will have the task of approving appointment of personnel newly appointed to the publishing role and approve concepts for publication and also approve content prepared by authors and folder administrators.

Folder administrators can define the details of documents, write content for pages and publish (or unpublish) pages on the website. They are also responsible for approval of content they create and management of content within their designated area or site. New folders are created, have their properties modified and are moved by folder administrators if required. The folder administrator also recommends, creates and adjusts memberships to the system, determines whether permissions flow to other folders and maintains site specific image libraries. The folder administrator may also perform the role of author depending on the size of the content group.

The folder administrator also should liaise with a delegated approver or reviewer, a further membership level, to ensure that a document to be published has their authorisation.

The specific publishing tasks of the folder administrator are as follows:

- recognising the need for a publishing requirement;
- identifying the audience and the relevant stakeholders;
- obtaining stakeholder approval and obtaining approval from the approver/reviewer;
- ensuring accuracy of content including audience demographics;
- adhering to governance principles; and
- recommending implementation date and content currency period.

The processing tasks of the folder administrator are as follows:

- writing documents;
- managing document and version control;
- approving the final product and its currency period
- ensuring clarification of communication
- confirming audience demographics and confirming stakeholder buy in
- ensuring content does not breach governance principles.

A further level in membership is that of an author and a content author is any organisation member required to write content for a designated part of a website or of an Intranet site.

The author creates the document and can suggest which part of a website or web page could be published to. The author creates the content within the page and can edit any page properties. Once the author has obtained all the necessary reviews and approvals from a reviewer/approver for a document they advise the folder administrator of the content completion for the folder administrator to fulfil the publishing role.

The specific publishing tasks of an author are as follows:

- recognising the need for a publishing requirement;
- identifying the audience and the relevant stakeholders and obtaining stakeholder sponsorship;
- obtaining approval from the line manager, or manager responsible for the author;
- ensuring accuracy of content including the audience demographics;
- adhering to governance principles;
- recommending implementation date and content currency period.

The specific process tasks of the author are to write documents and manage document and version control.

The final category of membership levels is the reviewer/approver. Personnel in this category can preview pages before and after they are published. The reviewer usually plays the role of checking the content of a web page. Once a site or page is published, any concerns or errors in relation to the content become the responsibility of the approver/reviewer. Any action taken because of inappropriate, offensive or illegal content would also be its responsibility.

Once an approver has been requested to authorise a document for publication they should seek to review the document, provide comments for

amendment or approval for publication to the folder administrator as soon as possible.

The content tasks of the approver include the following:

- approving the final product and its currency period;
- ensuring clarity of communication;
- confirming audience demographics;
- confirming stakeholders buy in;
- ensuring content does not breach governance principles; and
- accepting content ownership.

The process tasks involved with an approver include:

- confirming publishing method is appropriate;
- quality check of the documentation and check and sign content checklist;
- approve the final look and feel with the publisher, who may be the folder administrator.

A different category or membership level may be a publisher, which as just mentioned may be the folder administrator; and the publisher has all of the capabilities of an author but has the added ability to publish web pages or sites once they have met the legal and usability guidelines of the organisation. Often the publisher is the author and regardless a publisher must not publish a page or pages until all legal and usability requirements for those pages have been met.

Content is created and mapped using a folders and files analogy. The folder administrator creates a folder which becomes a home for the new content. The process of creating a new folder automatically generates the folders home page ensuring that at least one page exists per folder. The content author creates the additional pages in this "child folder". A folder or page may have a status of:

unpublished, meaning that it is still being worked on or awaiting approval. The content can be previewed by users with the relevant access;

published, meaning that it has been published to the site;

expired, meaning that the time for review was exceeded and the page is no longer valid without review and/or modification; and

modified, meaning that the content has been published and is awaiting republication. Site navigation is controlled through a folder and child folder mechanism which is enforced by the sited administrators. This allows a certain amount of flexibility that is not available for modification by the content creators or authors.

The process of a user creating a website home page or a web page in general must first begin with the user requesting a folder which is done by completing a "new folder request" form and e-mailing it to the users supervisor or manager. The supervisor will approve or decline the folders requested and if approved they are then passed to the folder administrator or CCA who creates the folders. This process should be completed within about 2 to 3 days.

If the request for new folders is declined feedback will be received by the user on what changes are required in order to have the folder request approved.

Once approved the user will be notified and the user is ready to start creating their web pages using a particular software tool called "Create It". Generally the user, for example on terminal 12 will access, using a browser, the staging server and be presented with the organisation's home page. From there the user will click on an icon denoting "Create It" to have access to the "Create It" home page and then the user clicks enter. The system then displays the log on screen via a computer program stored in memory 18 prompting the user for the user name and the associated password. The user would then enter the information and click OK and the system will then verify the user name and password. Once this is authenticated the system displays the main administration screen (MAS) which is one of the three different views that the user would see. The other two are page editor view and detail editor view. Each of these three views have a unique set of menu commands. In creating a new site it will contain a home page and eventually have child sites attached.

From the MAS, the user chooses "create/create site" and the system launches the "create site program module" as shown in Figure 2. The program modules are computer programs that may be stored in the memory means 18 of the server 6 that with the assistance of the computing processing means 16 guides users through a series of steps or questions to perform a certain task.

Thus shown in Figure 2 is a screen 50 that is the first screen in launching a create folder program module. The program module can also be used to create sites. Throughout the following screens three options are provided to the user and that is to go to previous screen through button 52, go to the next screen through button 54 or log out of the system by closing the page by depressing button 56. This create folder program module uses a series of prompts to obtain the folder name, folder description which is optional, the name of the existing folder to copy which is also optional, the name of the existing page to copy (optional), which set of users to grant folder access to, whether to list this folder in the index and a colour scheme for the folder.

Firstly with respect to Figure 3 there is shown a screen 60 where a box is provided to the user to enter the folder name at 62 and a description pertaining to the folder name is entered in box 64. The user may also be given the option as to which various sites or folders that that user wants to copy into the folder that he or she is creating. There may also be provided options for pages that the user wants to copy into the folder that they are creating.

In Figure 4 there is shown a screen 72 that provides options to the users as to who they wish to be able to browse the folder that they are creating. They can highlight either of buttons 74 or 76 to allow either everyone to browse the folder or allow only a selected group. The selection of either button 80 or 78 provides the option to display the folder in the index.

With reference to Figure 5 folder colour schemes can be selected through screen 82 and these can be selected from a various number of colours in box 84 for each of the page, title, body, link title and links. The selected colour schemes

are shown in box 85. A preview of the colour schemes can be accessed by depressing a button (not shown).

Finally, shown in Figure 6 is the screen 88 that confirms the various settings that the user has created. It specifically lists the name of the folder, the description, people authorised to access the folder and a folder theme. An option is also provided to display the created folder in the index. The user simply clicks on the button 90 "OK" to confirm the settings or may change or view the settings by using tabs at top of the page (not shown). Thus if the user has entered and validated all of the fields then when the user clicks "OK" the system will display the message "your settings have been confirmed and a new folder has been created". The user then clicks OK and is returned to the MAS view which now lists the new folder name.

If any of the information required is not entered into the appropriate program module fields, then when the user clicks "next" the system will display an error message.

In editing or making amendments to a home page or any web page the system must be displayed in "edit" mode.

Shown in Figure 7 is a typical layout for a blank web page having a space 94 to insert a heading, a tool bar 96, a space 98 to insert text, a toolbox 100 and optionally a box to provide links to other pages or sites.

To insert a heading at 94 text is typed above the format tool bar 96. The heading should always adequately describe the content that the user is about to type into or onto the page. The user will use their mouse to highlight or select the word "heading" and then overtype that with the name of the heading they wish to use. Body text is entered in the space 98 directly below the format tool bar. This is done by using the mouse to highlight and select the words "body text" on the screen 92 and pressing "delete" using the "delete" button on the keyboard. The required text is then typed in to the space 98. Subheadings may also be created within the text of the body in space 98 and this is done by positioning the cursor where the subheading is to appear, selecting "heading "

from the pull down list in the format tool bar and then typing in the text of the subheading title and text underneath that.

Tables may be inserted into the body of the text but not into the headings. This is done by clicking on the icon "101" in the tool bar 96. Options are then presented to the user such as the number of columns and rows that are to appear in the table and then it is a simple matter of clicking on the "insert" button which is presented to the user on the screen after clicking on the icon "101".

In order to preview a page as it will appear when it is published, the user clicks on "view" in the main link menu and selects "preview" from the drop down menu. The page is then displayed and the status of the page is also displayed on the top right hand corner which should indicate that the page is in preview mode and unpublished. If a mistake appears on the page then it is simply a matter of selecting "edit" from the main link menu and selecting "edit page" from the drop down menu in order to have the page displayed in edit mode.

To exit "Create It", the user clicks on "file" in the main link menu and selects "exit Create It" in the pull down menu. Editing of the heading or body text using HTML may be used by clicking on the icon 102 in the tool bar 96.

In order to create web pages the command is located in the "create" menu of the main link menu and is only available when the user has a folder highlighted. A page cannot be created when a web page is open. To begin the process of creating a web page a page program module is used that steps the user through a series of windows that need to be created and these are known as page property windows. There are six page property windows, being the page details, classifications, review date, template, page owner and confirmation. Additionally other properties include publishing dates and navigation links. Again the computer program stored in memory 18 instructs the processing means 16 to guide the user with the windows and prompts, using the program module.

Each window requires different information about the web page that the user is creating and this information is used to locate and manage web pages throughout the whole site.

The toolbox 100 enables and sets up links to:

email a page owner at 104;

display page information at 105;

go to a text page only at 106;

email the page to a colleague at 107; and

make a comment to the system administrator at 108.

A search engine 109 allows a user to search under various options at box 109, after depressing the "GO" button 111.

To begin creating a web page a user from the folder section or from the MAS chooses "create/create page". The system launches the "create page" program module as shown in Figure 8 on screen 110. The next button is clicked to go to the next screen 113 which is page details shown in Figure 9. Two boxes 112 and 114 are completed by the user to enter the page name that they choose to use and a summary of that page. The page name should always describe the contents of the web page and help a user decide if the content it contains is relevant to them. Text in the summary page box 114 will appear as summary text, when a user searches for a particular subject/page using the "find it" command.

A classifications window screen 120 shown in Figure 10 has a number of check boxes that is required to be filled in by the user so as to determine a profile for this particular page. The profile merely acts as a reporting mechanism for authorised staff to ensure that all staff that should have access to this page do have access and that the page is located in the best place within the navigation options. The profile is made up of four sections being division, region, job role and subject. The first three sections help determine who should have access to these folders as they log on each morning. That is the parent

folder of this page will be made available as an option from the navigation links. As more and more folders and pages are added to a site, rather than seeing all of the folders for every page and for every category, a user when they log on will see a selection based on their division and region that they work within and their job requirements. This is determined by the user log on profile being matched to the profile selected in the classifications screen 120.

Links can be defined to other web sites, internal or external, to an email address or to a public outlook folder or to an up-loaded document or another page on the site. As described these links are enabled either through the body text 98 or through the links box 100. The links box 100 can contain links inherited from the child folder when the folder was created, links to other pages in the same folder and links to other pages or sites defined by the user. Once defined, links can be modified to change the displayed text for the order that they appear. It is also possible to inherit the links from the page or site parent. The hierarchical structure or folder and files structure is used throughout a web site and a metaphor means is applied in the site or on a page so that any work created in one folder is then linked back to the parent folder or to other folders. The navigational links are inherited and appear automatically when creating a page or folder.

Shown in Figure 11 is a screen 122 which may be accessed by clicking the next button 54 and in box 124 a date is entered by the user representative of when the page is to be published and a date box 126 representative of a date for when the user wants the page to expire.

Shown in Figure 12 is a screen 128 showing the property review date whereby the user enters the date in box 130 by which they want the page to be reviewed. A specific number of days, weeks or months may be selected. Once the page has been published, when each review period is due a reminder email will be received or delivered to the user requesting they check and alter the contents of their page. It will remain set to the same period until the user changes it or deletes the page. By clicking the next button 54 the user is guided

to a page template screen 132 shown in Figure 13. This screen is used to indicate whether the page will or will not contain a links box. If it does contain a links box the user will need to decide whether they require the structured navigation links to be the same as those in the links box on the home page. By selecting "page with links" from the pull down box 134, the user will be asked whether or not they wish to display the same links on the home page and this is done by checking a tick box 135. By requesting the same links as the home page it means that the structured navigation links such as links to upload a document, web pages and e-mail addresses added to the home page will also be accessible on this page. By selecting "page without links" will ensure the optional links box described in relation to Figure 7 will not appear on that page and the body text frame will be widened to cover the page.

Shown in Figure 14 is a block diagram of the technical architecture of the system which shows data flow from creating a document or web page, publishing it and authorised users as well as other users gaining access to read the published documents. The "Create It" and "Read It" are built from Microsoft tool sets within SQL Server and Internet Information Server (IIS). These frame works are used to support data (SQL Server), data access (ADO and SQL Server stored procedures), application logic (VBScript under Active Server Pages and stored procedures in SQL Server) and presentation logic (IIS).

As shown in the Figure are client editors 139 which are browser based and require at least Internet Explorer 5.0. No logic is delivered to the client and the application logic resides in the Create It engine.

The Create It engine application creates content, links and metadata by interaction of the user with active server pages (ASPs) 143 which are accessed by the Internet Information Server 141. The IIS 141 is functionally equivalent to the server 6 shown in Figure 1. The application logic is contained in the ASPs 143 which are presented to the user in a wizard format. Retrieval of content data and presentation components is controlled by ASPs accessing both of the content data base 153 (via ActiveX Data Objects through the ADO layer 145

and stored procedures 147) and file storage 149. As wizards complete content it is pushed into Create It storage via ActiveX Data Objects and SQL Server stored procedures. Mechanisms exist within the Create It engine to retrieve user email address detail held in for example a Microsoft exchange address book, also allowing for group emails to be used, and to process content and copyright exploration by an SMTP email transport link 151. Use of stored procedures and ADOs allows for a level of data abstraction and minimises the number of data access objects requiring update should requirements change.

The Create It storage consists of an SQL Server data base 153 and a file system based file store 149. These components are accessed by the Create It engine 141 and the publishing engine 155.

The publishing engine or server 155 takes content from the Create It system and publishes it to the storage mechanism on the Read It side of the system. Logic for this process is embedded within ASPs hosted in the Internet Information Server which is equivalent functionally to server 8 in Figure 1 and the stored procedures 157 is accessed via ADO layer 159 directly. The publishing mechanism takes into consideration two modes of delivery:

- dynamic delivery where content remains in a data base structure and is delivered on a just in time basis (or "on the fly") to the browser through the ASP mechanism. Files are also delivered to the file store 161 via the ASP 163.
- static delivery where HTML based content is pushed into the file store 165 and is delivered from there. This mode is able to push content through a file wall to external sites.

Where the dynamic mode is in operation the publishing engine 155 moves across content between the two data bases 153 and 167 using a synchronisation mechanism, that is, either insert or update the content in the target database via SQL Server based transport. File stores 149 and 161 are also synchronised. In the static mode content is marshalled in ASPs in HTML format and written to file in the file store 165. Once a file is created it is synchronised in the same mechanism as above.

Thus in summary, static production or delivery assembles content from the publishing processes into HTML files stored in a file system and served to the web server. Static production is an ideal mechanism for extremely high volume access where content is infrequently changing. On the other hand dynamic production involves the generation of the HTML page from page templates and content stored in granular or component form. Dynamic production requires additional resources to retrieve and assemble these pages and additional mechanisms may be employed to provide caching at a lower level than a page. Dynamic production is best suited for situations where content is rapidly changing or highly personalised. For example where information is converted from a data base to a screen directly for a user, such as where data is read from a presentation layer within a web environment and published on the fly.

Content storage is in the form of either a SQL Server data base and file based storage system or just the file based storage system on its own.

The Read It engine 169 takes content from the storage system and makes it available for presentation through the client browsers 171. In a dynamic mode of operation the request for a page is fulfilled by a ASP 173 collecting relevant content and links from the data base 167 via the ADO layer 175 and stored procedures 177, accessing relevant files from the file store 161 and rendering into HTML using the wrapper template stored in the file store 161. In this mode the action of page delivery also notes the usage of the page in the data base through a write back mechanism on link 179.

In a second static mode of operation the ASP 181 accesses only HTML files from the file store 165. Links and document references are pre-built in this mode in the form of HTML pages by the publishing engine 155 described above.

Finally, the browser 171 is the ultimate viewer of content created through Create It and Read It. The simple HTML output allows support for relatively basic browsers such as Internet Explorer 2.0.

The page owner window is displayed in screen 138 shown in Figure 15. The page owner is the person users can contact or e-mail if they have any queries or questions about the content of a particular page. The name box 140 allows a user to search for the name of an employee in the organisation and download contact details into the owner classification window. There is an option provided by button 142 to search for a particular name and the search results will appear in the window 144.

In Figure 16 there is shown a screen 150 that displays a series of confirmation settings. This screen has collated the main details from the other page property screens so that they can be viewed in one window. This window can be used to check if page property information is correct at any time when creating a page or after a page has been created. The following information is displayed within this window:

page name, summary about the page contents, when it expires, display links to other sites or pages, template, page owner and page owner e-mail address.

When all the information is accurate the user depresses the "finish" button 151 to confirm and save the page property settings. These page property settings will be saved and the web page is created within this folder. The folder is displayed and the new page is represented by an unpublished page icon. If any of the information required to be entered into the appropriate program module fields is not entered, when the user clicks next the system will display an error message to prompt the user to go back and enter details.

To amend the page properties the following steps may be taken:

1. Navigate the folders to locate and highlight the relevant web page.
2. Click "edit" from the main link menu.
3. Select "page properties" from the drop down menu.
4. Move to each page property window using the links in the link menu.
5. Click the OK button to save changes and close the page properties window.

6. Make any required amendments to the page content.
7. Select "file" from the main link menu.
8. Select "save" from the drop down menu.
9. Select "file" from the main link menu.
10. Select "exit Create It" from the drop down menu.

In order to amend the web page and in particular content information displayed in a web page the following steps may be taken:

1. Navigate the folders and locate the page to be amended and highlight that page.
2. Select "edit" from the main link menu.
3. Select "edit page" from the drop down menu.
4. Make the required editing amendments.
5. Select "file" from the main link menu.
6. Select "save" from the drop down menu.
7. Select "file" from the main link menu.
8. Select "exit Create It" from the drop down menu.

A page expiry report is also provided to assist a page owner ensuring that all of the pages that they are responsible for are kept up to date with the latest information. The page expiry report is viewed from the page or folder level whereby the folder is highlighted then "view" is selected from the main link menu and then the user selects the page expiry report from the drop down menu.

In creating website and web pages and editing them it is to be noted that authorised people or authorised teams can do so in a distributed and geographically dispersed manner. For example if a team comprises three people that are located in three different cities across the world they may access server 6 and create web pages or sites or build on already created web sites and pages that have been done by other team members upon entry of a user ID and password. Such a situation may arise with regard to private folders where a folder or page is being created for a specific audience which is stored inside a private folder on staging server 6. Thus only those staff that have access to that

private folder will be able to amend the content of the folder or pages. This may entail the need for conversion of formats to enable consistent access to a variety of data sources such as news feeds in XML, emails and raw database records.

Navigation links can be inserted into the body text 98 or into the links box (Figure 7) of a web page. Navigation links may be established to another web page in the user's folder:

to another web page in another folder noting that users can only link to other web pages and web folders that they have access to within the overall system that is not to a private folder;

to a public folder;

to another website;

to upload a document; and

to an e-mail address.

Headings or line separators can also be inserted into the links box (Figure 7).

The process for creating a navigation link in the body text or in the links box is very similar. The text box to be completed are the same for each navigation type whether you create a navigation link in the text box or the links box. The only steps that differ are how you begin creating the navigation link at the main link menu.

The following is an example of creating a navigation link in the body text:

1. position the cursor in the body text where the navigation link is desired to appear.

2. select "insert" from the main link menu, and

3. select "insert link in body text"

The body text link menu window will be displayed and from there the link type is selected from the list of available links.

Then the next button is clicked and what is displayed is a box detailing the link type, the display text and a further box requiring further information.

After the type of link is selected the next button is clicked and then the display name of the link is inserted into the display text box. The other required information is inserted into other text boxes and the add button is then clicked.

The navigation link window is displayed showing the newly created navigation link by its display name. This is then saved and closed. Links created in the body text do not work until the page is published. Links in the link box will work with both preview mode and edit mode.

To create a link in the links box (Figure 7) the page must be displayed and the following steps taken:

Firstly the command "insert" is selected from the main link menu and then "navigation link" is selected from the drop down menu. Navigation link management window is then displayed and all of the steps that follow are the same as creating a navigation link in the body text previously described.

To add a navigation link to a web page the following steps are taken:

From the MAS the user double clicks a site name, highlights a page name and chooses "maintain/editor page". The created system displays the selected page in edit view and the user then chooses "edit/add document". The system launches the navigation links program module as shown in Figure 17 on screen 160. The user simply clicks on a link or links of their choice in box 161. A link to the selected item(s) is then added to the links box (Figure 7) or links column to the existing page.

Additional facilities provided by the computer program is the insertion of a heading in the links box (Figure 7) which is able to divide a list of navigation links into sections and possibly by the type of navigation link or the type of information . The user may also view and change the order of existing links by following certain commands through the navigation link management window. A separator may also be inserted into the links box which may be used to define the end or the beginning of a section of text/information. Again this is done by following a series of steps using the navigation link management window.

Other options include deleting an existing navigation link whether that is in the body text or from the links box, amending details of existing navigation links.

Images may also be inserted into the heading or within the body text of a web page but cannot be placed within the links box (Figure 7) of a web page. An image could include a picture of a person, a trade mark, a map, a technology picture, a cartoon or a musical excerpt. If the user wishes to have a particular image displayed on a web page or web site the user may e-mail the image to a management section for approval to be included.

From the MAS , the user double clicks a site name, highlights a page name and chooses "maintain/edit a page". The page is then displayed in edit view. The user then chooses "edit/page contents" and the system displays the page in detail edit view. Then a choice is made to either insert/body image or insert/title image depending on where the image is to be inserted, i.e. the body or the title. The system then launches an image manager program module shown in the screen 180 in Figure 18. The image manager program module employs a sequence of prompts to search for and specify the image to add. Alternatively the user may choose the type of image from a window 184 from various categories and may use the drop down button 186 to select and view the various categories. The images for that category are displayed in the various boxes at 188 and the user selects an image by clicking on it or depressing an add button (not shown) and the image is then inserted at the cursor position where the user has selected insert/body image or at the right hand side of the title area if the user selected title image.

The user can also update existing images using the image manager program module as is shown in Figures 19 and 20. In Figure 19 the image manager program module screen 200 allows the user to select a category and either add or delete that image from one of the categories. Copyright on the images must be checked and the various boxes shown at 201 completed and submitted. Alternatively in Figure 20 a new category can be added or a category

can be deleted or renamed using the screen 202. Once the image has been selected and inserted at the points indicated the system returns the user to the detail edit view.

Once an author has finished editing, creating their web page or web site it must be delivered to a reviewer who must approve the work that the author has created so that it is ready for publishing. The reviewer will typically access the server 6 and access the document, and the reviewer may be geographically distanced from the author and then the reviewer is able to read the created document or web page or web site and make a decision as to whether it should be published or not.

If it is approved by the reviewer it then gets sent to the second server means 8 ready for publishing but still must meet certain criteria and be approved by the publisher before it actually gets published onto the organisation web site server 10. Only a person with publisher access to the system can unpublish and publish web pages and folders.

Prior to any item being published it must meet the conditions of the organisations legal, Intranet/ Internet and usability guidelines.

These may include but are not necessarily limited to the following:

- that the document has been checked for copyright on information and graphics contained therein;
- that it has been checked for correctness and relevance;
- has been approved by the user or author's line manager;
- that it does not infringe copyright law;
- that it is not discriminatory, sexist, demeaning or insulting;
- that it is not confidential to the particular organisation;
- that it would not adversely affect the organisation if published in the media; and
- that it has been reviewed in accordance with the organisation's Intranet/Internet content legal guidelines.

If each of these criteria have not been met then the publisher must not publish the document. A decision also has to be made as to whether or not the author, page owner or the user have applied non-biased judgments, using all of the guidelines and check lists available to the publisher. Again if this has not been met or any doubts are raised then the document will not be published.

To begin the process of publishing, the page that is to be published cannot be open. It is usually done from the folder level whereby the parent folder that has the web page or web document is highlighted and then file is selected from the main link menu and then publish is selected from the drop down menu. A publisher program module window is then displayed and the user clicks the "next" button 54 after reading an introductory paragraph. Then a screen 210 in Figure 21 is shown and the items to be published are selected via the corresponding check boxes next to those items. If a new page is to be published that is already existing in a published folder then the user or publisher need only place a mark in a check box next to that web page. Where a folder is being published for a first time then that check box next to the folder has to be ticked to indicate that it is to be published. Any pages within that folder that require publishing are also checked.

It is to be noted that a child folder cannot be published in an unpublished parent folder. The "next" button 54 is clicked once the publisher is satisfied that all of the boxes have been checked against which pages or folders they want to be published and then the items to be published will be confirmed in a window that is displayed to the user. If the information displayed is correct the "next" 54 button is clicked or if not then the "previous" button 52 may be depressed to return to the "select items to be published "window shown on screen 210. Next the release approval window is displayed as is shown in Figure 22 on screen 220. A series of check boxes must be checked to confirm to the system that the user or publisher has met certain conditions. If all of the check boxes are not checked with a tick then a message is displayed "please ensure all items are checked before continuing". The publisher cannot proceed until the check

boxes have been marked. Essentially all of the check boxes relate to the organisation's legal, guidelines that must be met. The "next" button is then depressed once these boxes have been checked and a window will then be displayed showing a message that asks the publisher to wait while the folders and or pages are being published. A second message "publishing completed" will then be displayed informing the publisher that the process has been completed. Once this has been done the user depresses the "finish" button to return to the folders. The colour of the folder and/or page that was due to be published should have changed from green to indicate that the page folder has now been published.

If a folder or page is no longer required then it must be unpublished before it is deleted. A folder or page may also be requested to be unpublished by a publisher or a reviewer if it is discovered that contents exist in that folder or page that do not meet guidelines. It is to be noted that if a parent folder is unpublished then all child folders under that parent folder will also become unpublished. Any web pages so affected may need to be checked and republished.

To unpublish a folder or page the user is guided to select "file" from the main link menu and select "unpublish" from the drop down menu. The unpublish program module is displayed providing a brief message and then the "next" button is clicked to continue. The "select items to unpublish" window is displayed and the user then selects or checks the boxes next to the pages or folders that need to become unpublished. The "next" button is then clicked and the unpublished selected items window is displayed showing a message that asks the user to wait while the selected sites and pages are being removed. A second message is then displayed informing the user that the unpublishing process has been completed. The "finish" button is then depressed to end the process and return to the system.

It will also be appreciated that various modifications and alterations may be made to the preferred embodiments above, without departing from the scope and spirit of the present invention.

CLAIMS

1. A method of creating or altering electronic information using a mark-up language in a communications network wherein said creating or altering is performed by one or more authorised users, said method comprising the steps of:

creating or altering said electronic information using said mark-up language through a processing means and using computer program means;

storing said electronic information in a mark-up language format, said stored electronic information forming a hierarchical structure;

approving said electronic information for publication; and

publishing or otherwise making access available to said electronic information provided that said electronic information has been approved.

2. A method according to claim 1 further comprising the step of assigning to said one or more authorised users one or more roles, said roles taken from any of the following:

author for creating or altering said electronic information;

approver for reviewing and/or approving said electronic information;

publisher for publishing said electronic information; and

reviewer for reviewing said electronic information.

3. A method according to claim 1 or claim 2 such that where there is more than one authorised user, said authorised users are physically and geographically separated.

4. A method according to claim 4 further comprising the step of each of said authorised users accessing said stored electronic information through individual processor means according to the role of each authorised user.

5. A method according to any one of the previous claims further comprising the step of forwarding the created or altered electronic information to the author of the created or altered electronic information where said created or altered electronic information has not been approved.

6. A method according to any one of the previous claims wherein said electronic information is a document.

7. A method according to claim 6 wherein said document is accessed via a mark-up language protocol.

8. A method according to any one of claims 1 to 5 wherein said electronic information is a website or part of a website or a web page accessed through a mark-up language protocol.

9. A method according to any one of claims 6 to 8 further comprising the step of transmitting the created or altered electronic information to an electronic storage means linked to said communications network for storage in said electronic storage means.

10. A method according to claim 9 wherein said stored electronic information is accessed only by an authorised user upon said authorised user supplying identification code means.

11. A method according to claim 10 wherein said electronic storage means is part of a first server means linked to said communications network and said authorised users have access to said stored electronic information via separate processing means upon entry of said identification means.

12. A method according to claim 11 wherein the step of creating or altering said electronic information is performed by a number of authors geographically separated communicating among each other to produce a version of said electronic information for approval and publication.

13. A method according to claim 11 or claim 12 wherein prior to said publishing step, the method comprises the step of retrieving said stored electronic information from said electronic storage means and transmitting said stored electronic information to a further server means linked to said communications network for storage in said further server means for access by said approver and/or said publisher.

14. A method according to any one of claims 6 to 13 further comprising the step of one of said authorised users requesting a folder for approval in order to create said document, website, part of a website or a web page.

15. A method according to claim 14 whereupon approval of said folder request, the method further comprising the step of forwarding said folder request to a folder administrator to create the requested folder.

16. A method according to claim 14 whereupon approval of said folder request is declined, the method further comprising the step of informing said authorised user of alterations required to have the folder request approved.

17. A method according to any one of claims 6 to 16 wherein said hierarchical structure comprises folders including parent sites and child sites.

18. A method according to claim 17 wherein said hierarchical structure exists on a web site or on a web page.

19. A method according to claim 18 wherein in creating a web page or web site navigation links are inherited such that the navigation links appear automatically under the action of a metaphor means.

20. A method according to claim 19 wherein said metaphor means is applied in said web site and upon creating a web page in said website, navigation links to a parent folder are provided in said web page through said metaphor means.

21. A method according to claim 19 whereupon a user logging onto said website has access only to pages or documents based on the user's work requirements and position within an organisation.

22. A method according to claim 21 wherein said user's access is based on a classification profile for said user for each web page or web document.

23. A method according to claim 22 wherein folders or links are displayed for access by said user based on a match between the user's log-on profile and said classification profile.

24. A method according to any one of the previous claims wherein an authorised user in creating or altering a web page or web document within a web site selects navigation links to be displayed on the created or altered web page matching navigation links displayed on a home page.

25. A system for creating or altering electronic information using a mark-up language in a communications network wherein said creating or altering is performed by one or more authorised users said system comprising:

one or more remote processing terminals linked to said communications network for providing access to said one or more authorised users so as to create or alter said electronic information in a mark-up language format;

data storage means linked to said communications network for storing the created or altered electronic information in said mark-up language format, whereby the stored electronic information forms a hierarchical structure, to enable an authorised user to approve said electronic information; and

wherein once the electronic information has been approved, said electronic information is published by an authorised user to enable users to access the created or altered electronic information.

26. A system according to claim 25 wherein said one or more authorised users are assigned one or more roles, said roles taken from any of the following:

author for creating or altering said electronic information;

approver for reviewing and/or approving said electronic information;

publisher for publishing said electronic information; and

reviewer for reviewing said electronic information.

27. A system according to claim 25 or claim 26 such that where there is more than one authorised user, said authorised users are physically and geographically separated.

28. A system according to claim 26 or claim 27 wherein said one or more remote processing terminals are used by said authorised users to access said stored electronic information according to the role of each authorised user.

29. A system according to any one of claims 25 to 28 wherein said system includes a server means linked to said communications network, said server means being accessible to one or more authorised users in the role of author to enable said creation or altering of said electronic information.

30. A system according to claim 29 wherein after the creation or alteration of said electronic information, said electronic information is forwarded to said data storage means for storage therein.

31. A system according to claim 30 wherein said data storage means updates a further server means whereupon an approver has access to said further server means through one of said processing terminals for reviewing and/or approving said electronic information for publication.

32. A system according to claim 31 wherein a publisher has access to said further server means through one of said processing terminals for arranging publication of said electronic information after approval by said approver of said electronic information.

33. A system according to claim 32 whereupon approval of said electronic information, said electronic information is published and transmitted to a third server for storage on said third server to be accessed by users.

34. A system according to any one of claims 25 to 33 wherein said remote processing terminals are wireless devices linked to said communications network through a cellular communications network.

35. A system according to any one of claims 25 to 34 wherein said electronic information is a document.

36. A system according to claim 35 wherein said document is accessed via a mark-up language protocol.

37. A system according to any one of claims 25 to 34 wherein said electronic information is a website, part of a website or a web page accessed through a mark-up language protocol.

38. A system according to any one of claims 25 to 37 wherein said stored electronic information is accessed by an authorised user through a remote processing terminal upon said authorised user supplying identification code means.

39. A system according to any one of claims 25 to 38 wherein in order to create said document, a website, part of a website or a web page, a request for a folder is made.

40. A system according to claim 39 such that if approval is granted to said folder request, the folder request is forwarded to a folder administrator to create the requested folder.

41. A system according to claim 39 such that if approval of said folder request is declined, said authorised user is informed of what alterations are required in order to have the folder request approved.

42. A system according to any one of claims 25 to 41 wherein said hierarchical structure comprises folders including parent sites and child sites.

43. A system according to claim 42 wherein said hierarchical structure exists on a website or on a web page.

44. A system according to claim 43 wherein navigation links are inherited upon creation of a website or web page, said navigation links appearing

automatically on said website or said web page under the action of metaphor means.

45. A system according to claim 44 wherein said metaphor means is applied in said website and on creating a web page in said website, such that navigation links to a parent folder are created in said web page through said metaphor means.

46. A system according to claim 44 whereupon a user logging onto a website has access only to pages or documents based on the user's work requirements and position within an organisation.

47. A system according to claim 46 wherein said user's access is based on a classification profile for said user for each web page or web document.

48. A system according to claim 47 wherein folders or links are displayed for access by said user based on a match between the user's log-on profile and said classification profile.

49. A system according to any one of claims 25 to 47 wherein upon creating or altering a web page or web document within a website, navigation links are displayed on the created or altered web document or web page which match the navigation links displayed on a home page.

50. A system according to any one of claims 25 to 49 wherein the created or altered electronic information is performed by a number of authors geographically separated communicating with each other to produce a version of said electronic information for approval and publication.

51. A system according to any one of claims 25 to 50 wherein said communications network is the Internet.

52. A system according to any one of claims 25 to 50 wherein said communications network is an intranet.

53. A computer program element comprising computer program code means to control a server means to execute a procedure for creating or altering electronic information over a communications network using a mark-up language by:

creating or altering the electronic information using said mark-up language through a processing means;

storing said electronic information in a mark-up language format, said stored electronic information forming a hierarchical structure;

processing the approval of said electronic information for publication; and

processing the publishing of or otherwise making access available to said electronic information where said electronic information has been approved for publication.

54. A computer program element comprising computer program code means to control a server means to execute a procedure for creating or altering electronic information over a communications network using a mark-up language according to any of the method steps of claims 11 to 24.

55. Computer program means for directing a processing means to execute a procedure to create or alter electronic information over a communications network using a mark-up language, said computer program means directing said processing means to:

create or alter said electronic information using said mark-up language;

store said electronic information in a mark-up language format, said stored electronic information forming a hierarchical structure, and

process the approval of said electronic information for publication;

wherein further said electronic information is published or otherwise made available to users when said electronic information has been approved for publication.

56. Computer program means for directing a processing means to execute a procedure to create or alter electronic information over a communications network using a mark-up language according to any of the method steps of claims 1 to 24.

57. A computer readable memory, encoded with data representing a computer program for directing a server means to execute a procedure for creating or altering electronic information using a mark-up language over a communications network by;

creating or altering the electronic information using said mark-up language through a processing means;

storing said electronic information in a mark-up language format, said stored electronic information forming a hierarchical structure;

processing the approval for publication of said electronic information; and

processing the publishing of or otherwise making access available to said electronic information provided said electronic information has been approved.

58. A computer readable memory, encoded with data representing a computer program for directing a server means to execute a procedure for creating, altering or viewing electronic information using a mark-up language

over a communications network according to any of the method steps of claims 11 to 24.

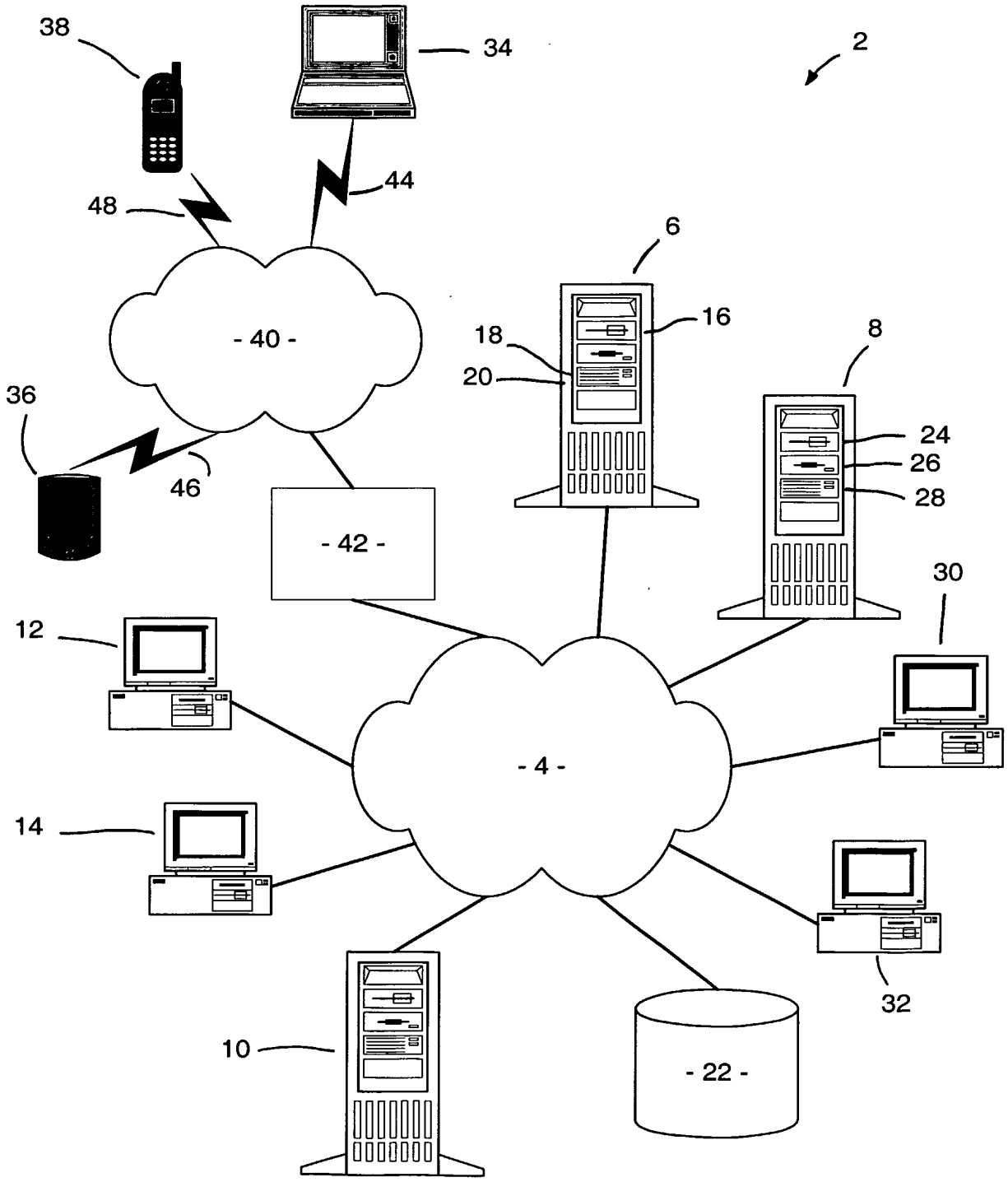


FIGURE 1

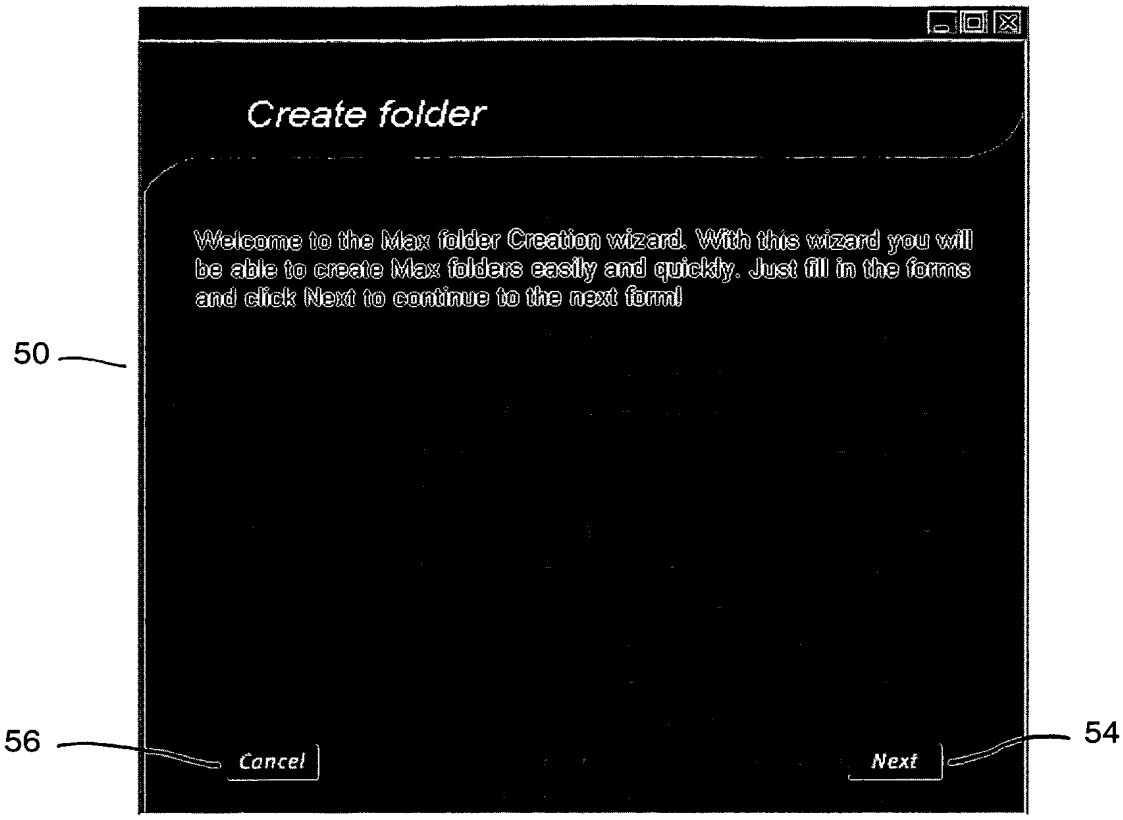
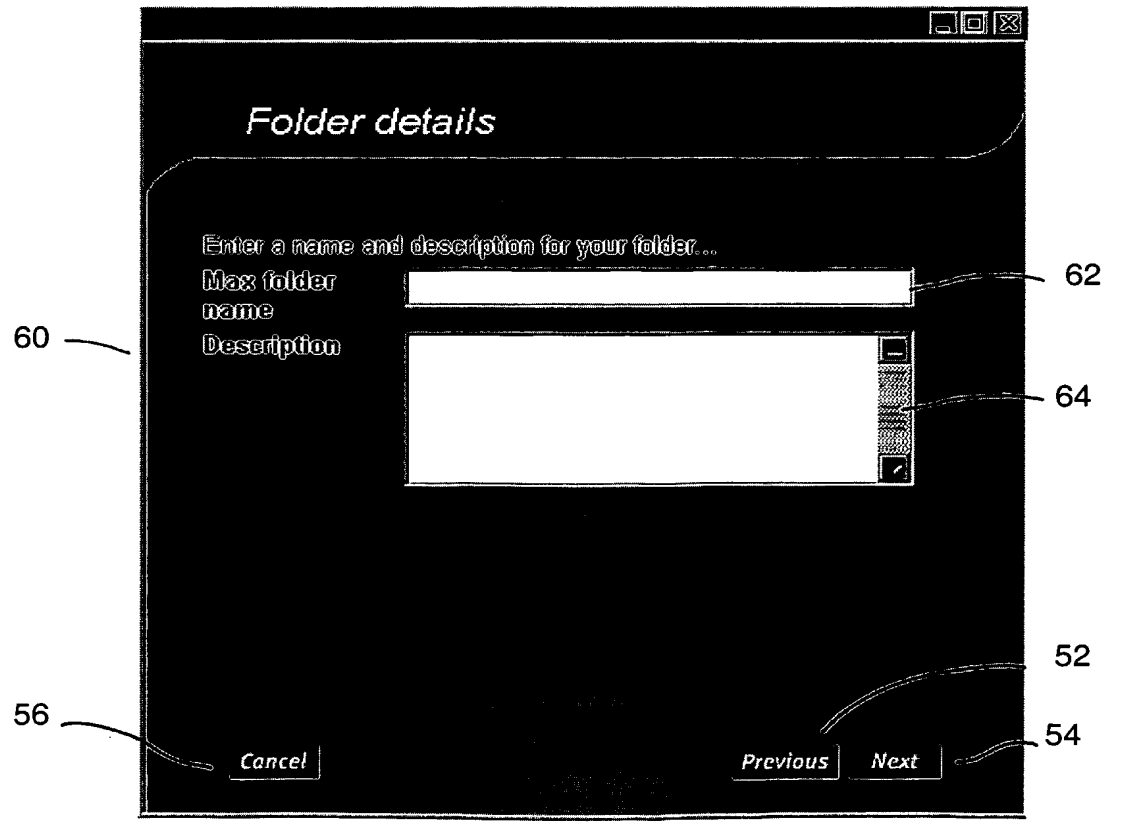


FIGURE 2



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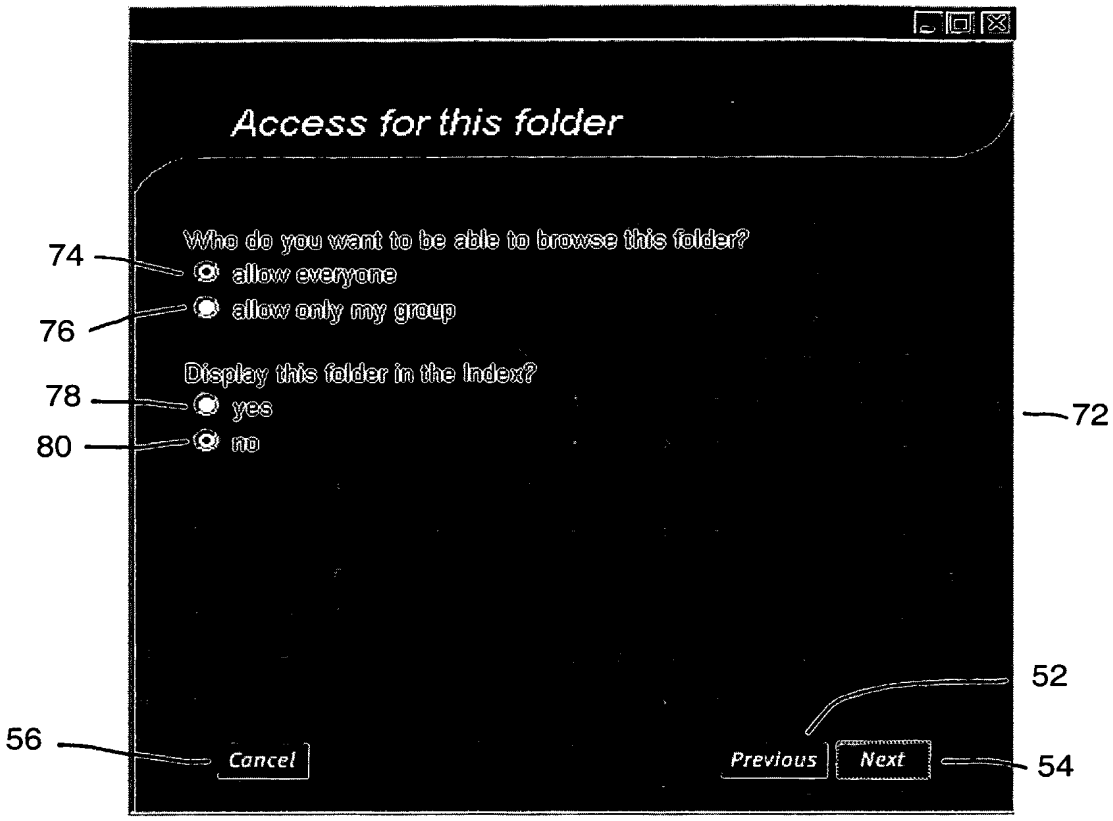

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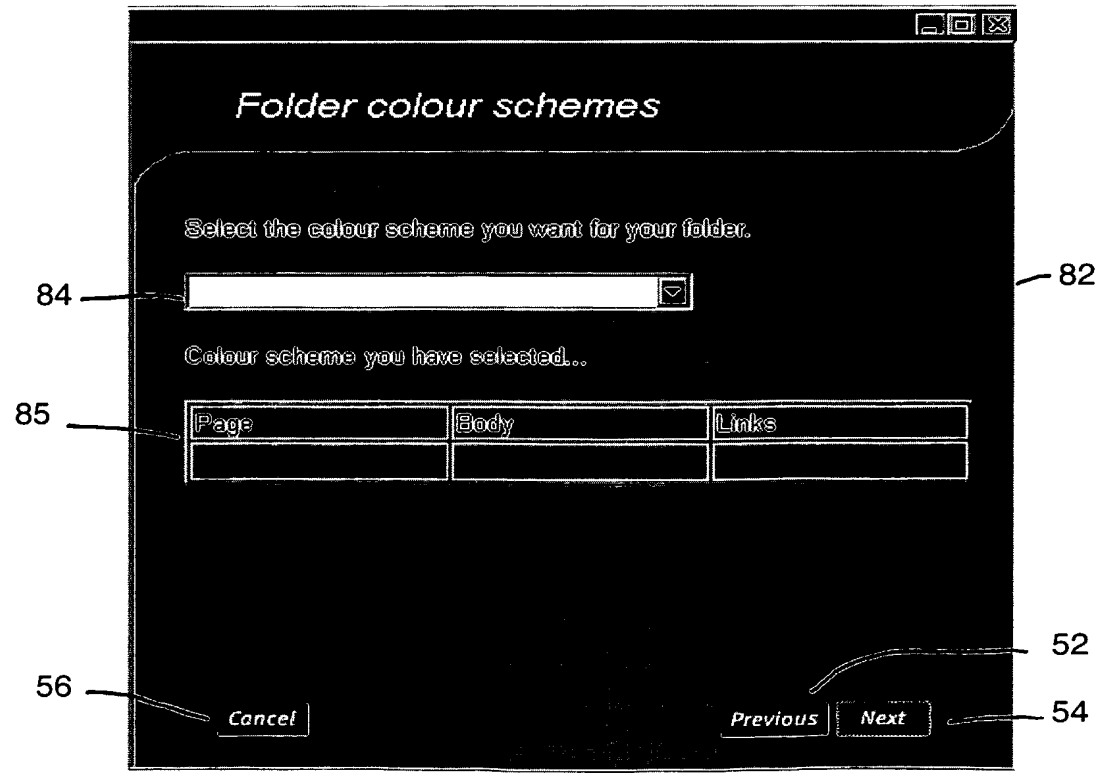
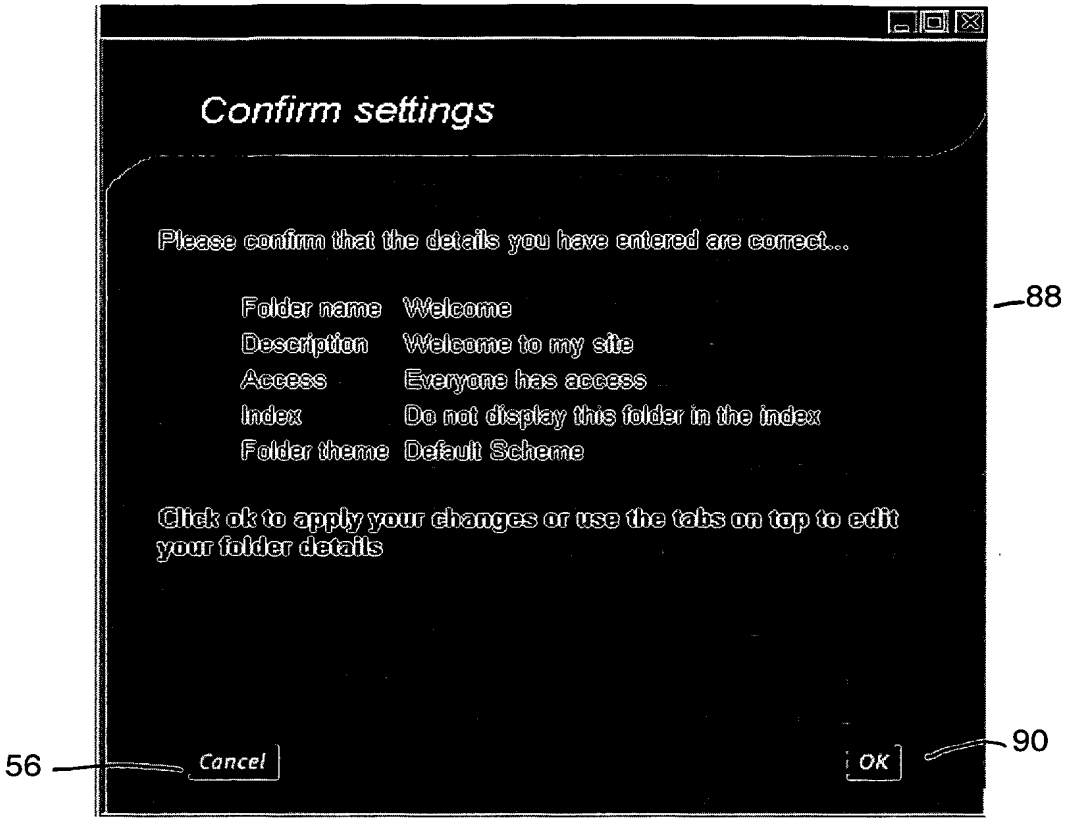


FIGURE 5



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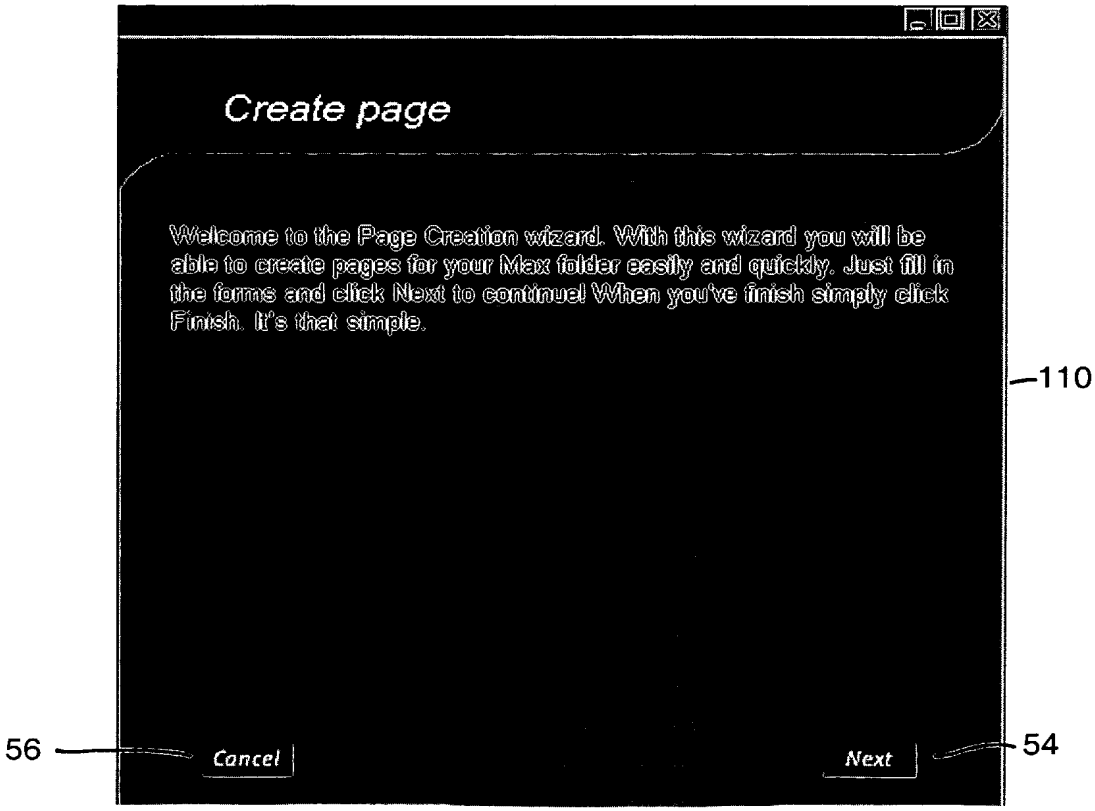

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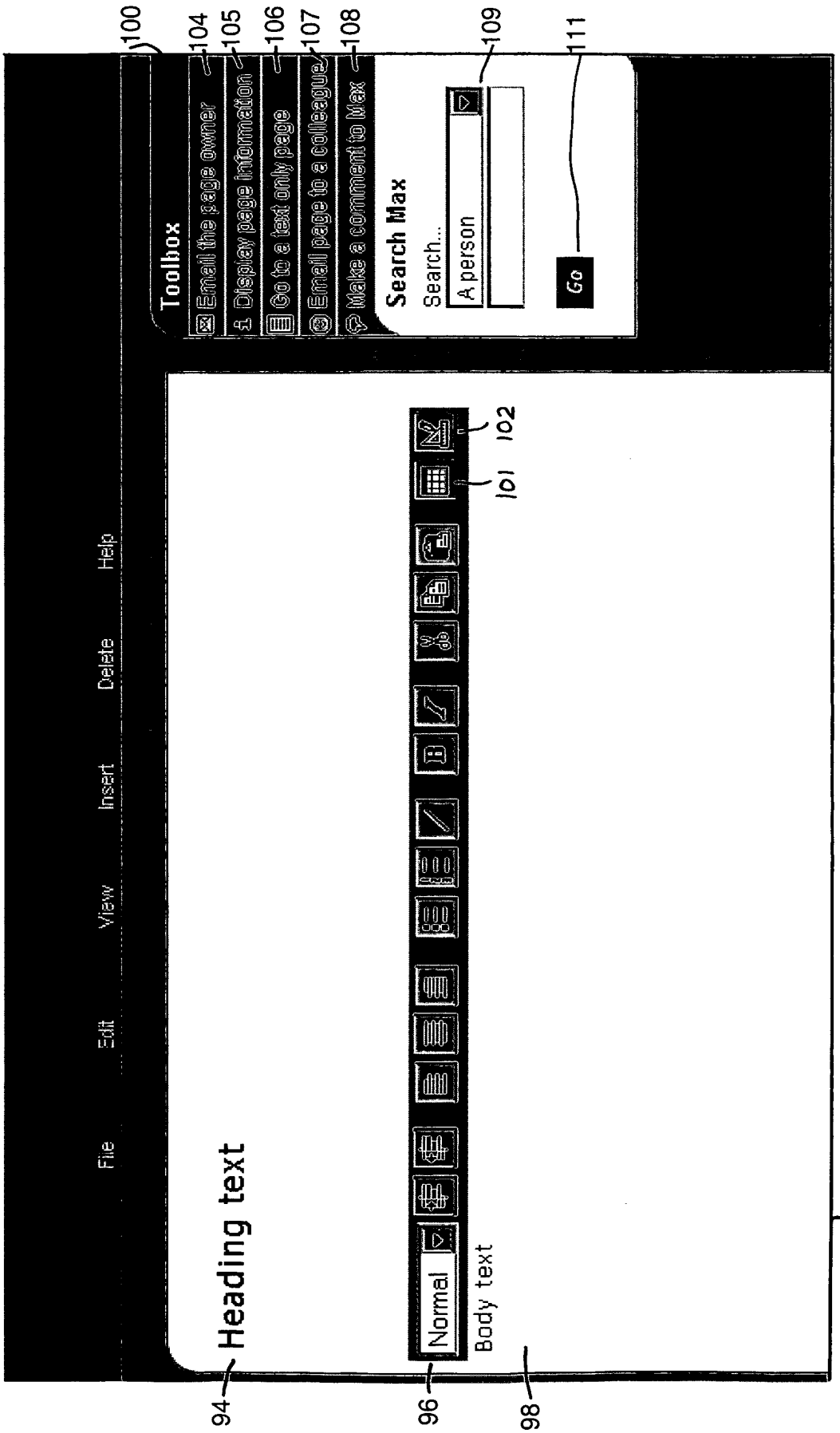
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Display page information
Go to a text only page
Email page to a colleague
Make a comment to Max
Search Max
Search...
A person
Go
File
Edit
View
Insert
Delete
Help
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101
Heading text
Normal
Body text
92
94
96
98

FIGURE 7

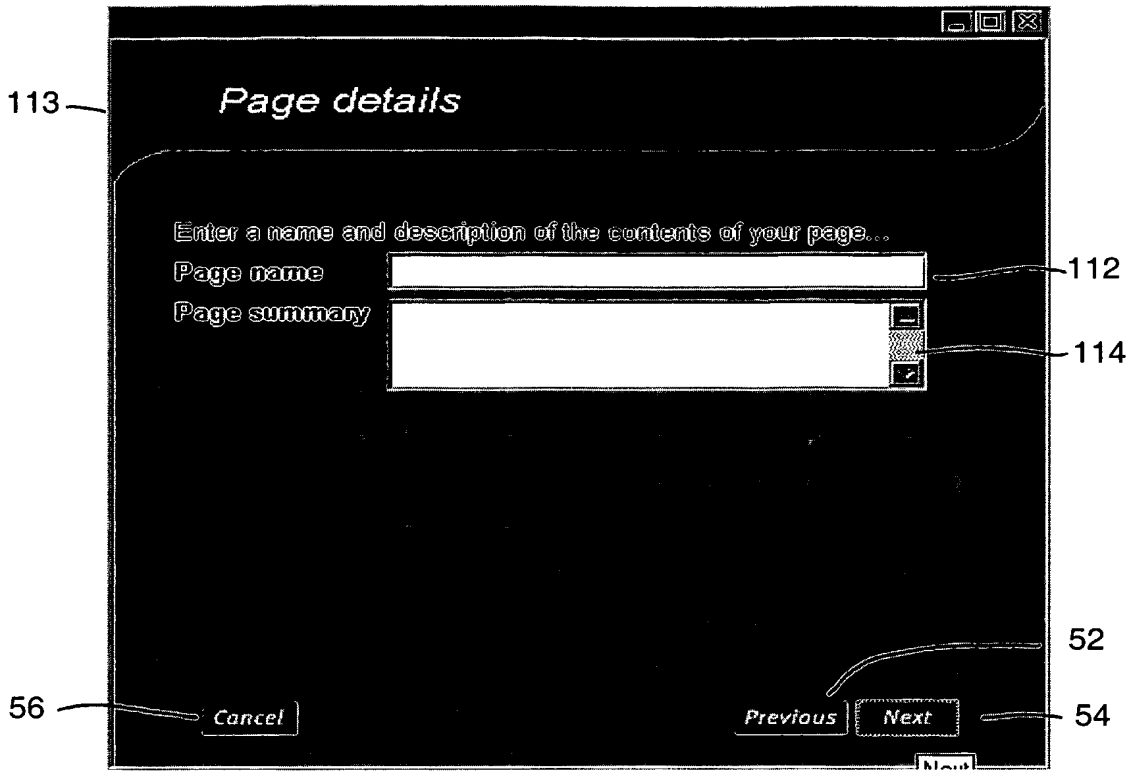
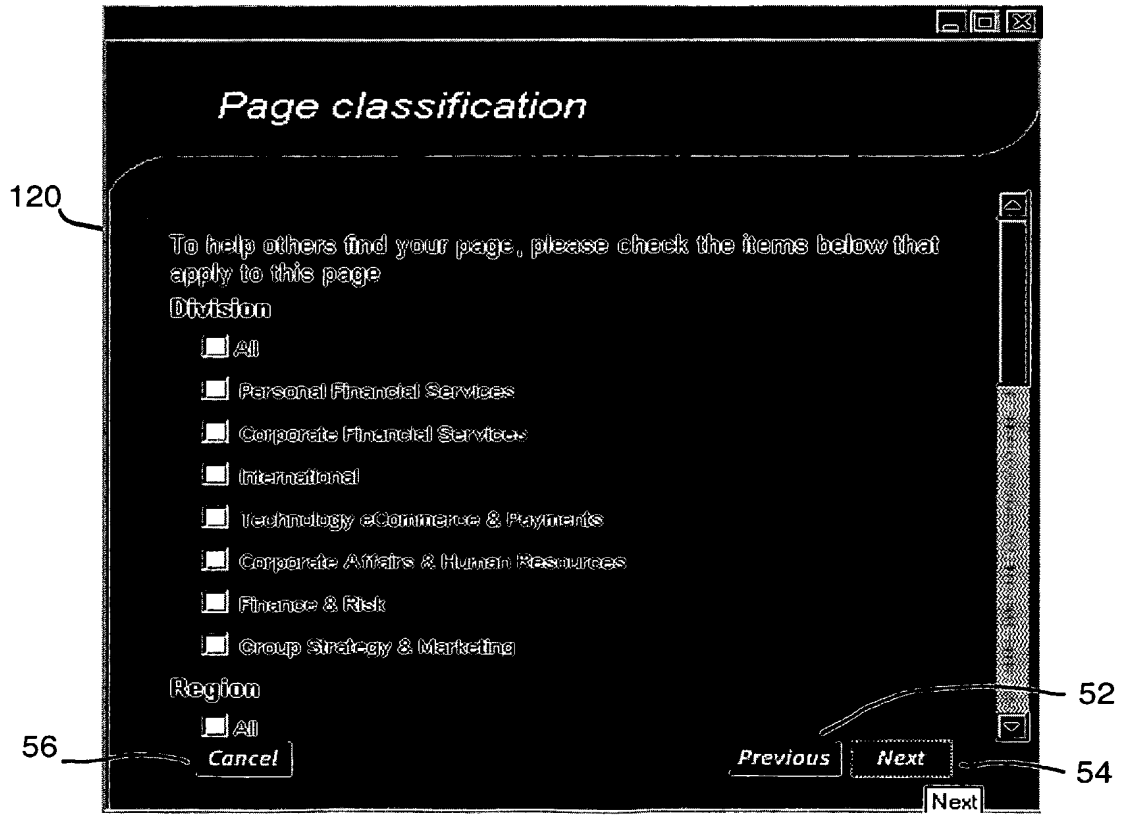


FIGURE 9



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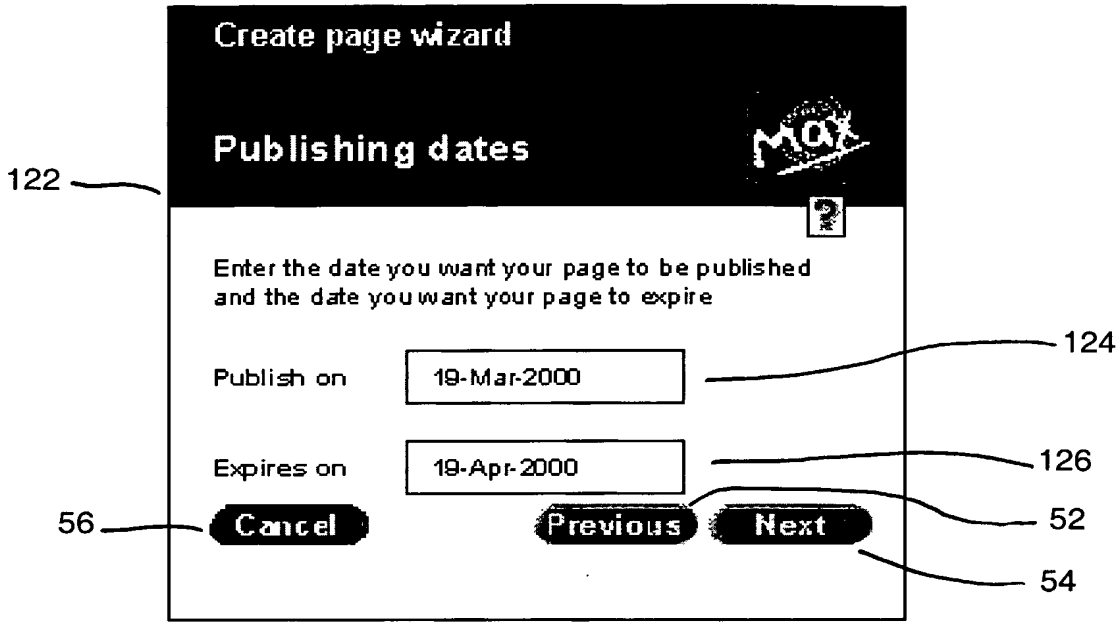
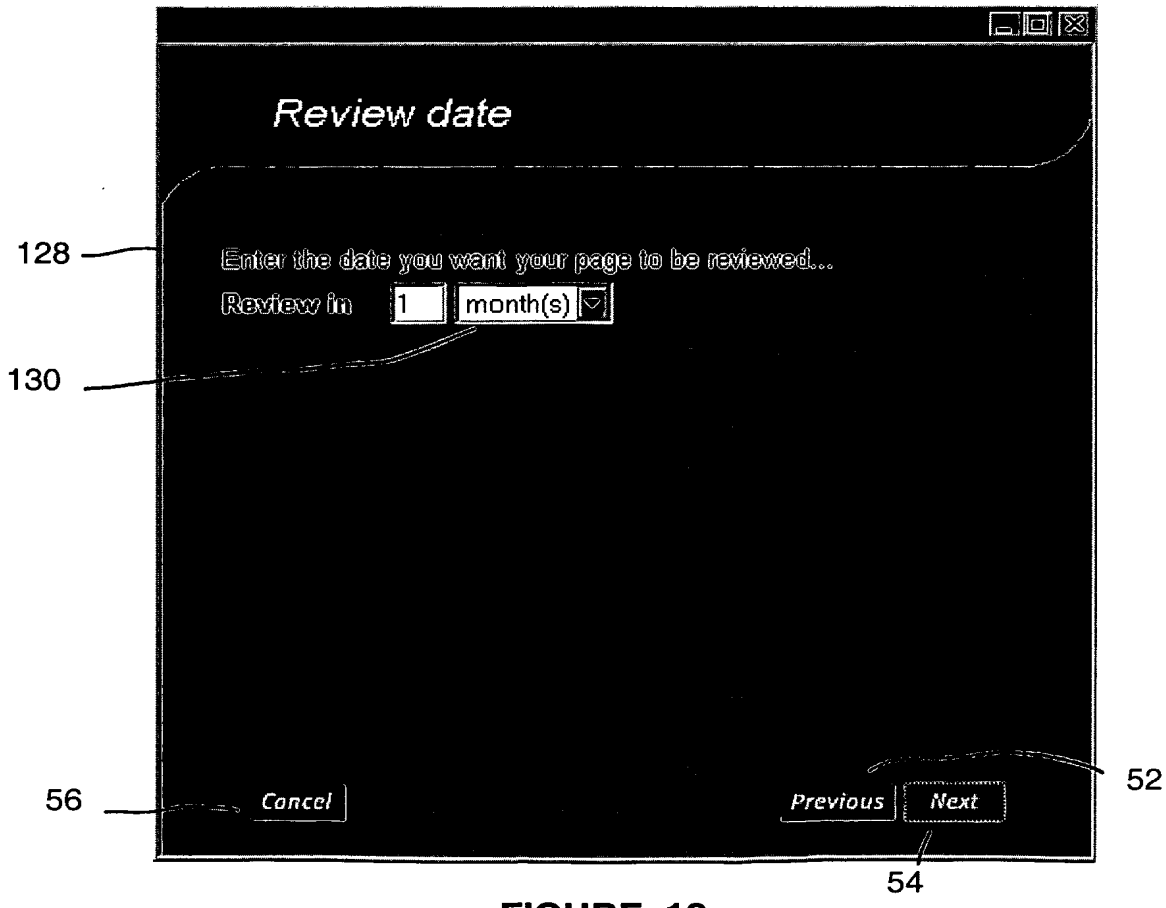


FIGURE 11



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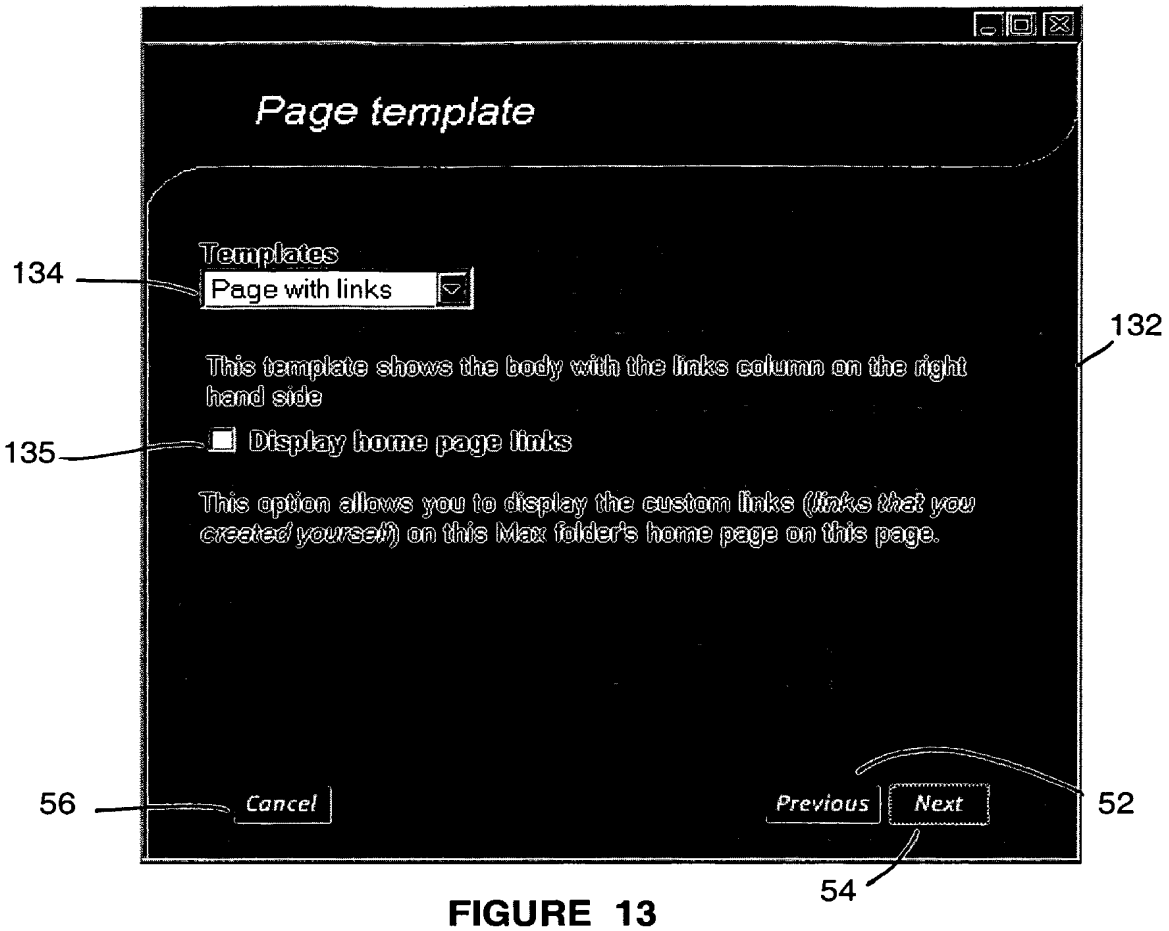


FIGURE 13

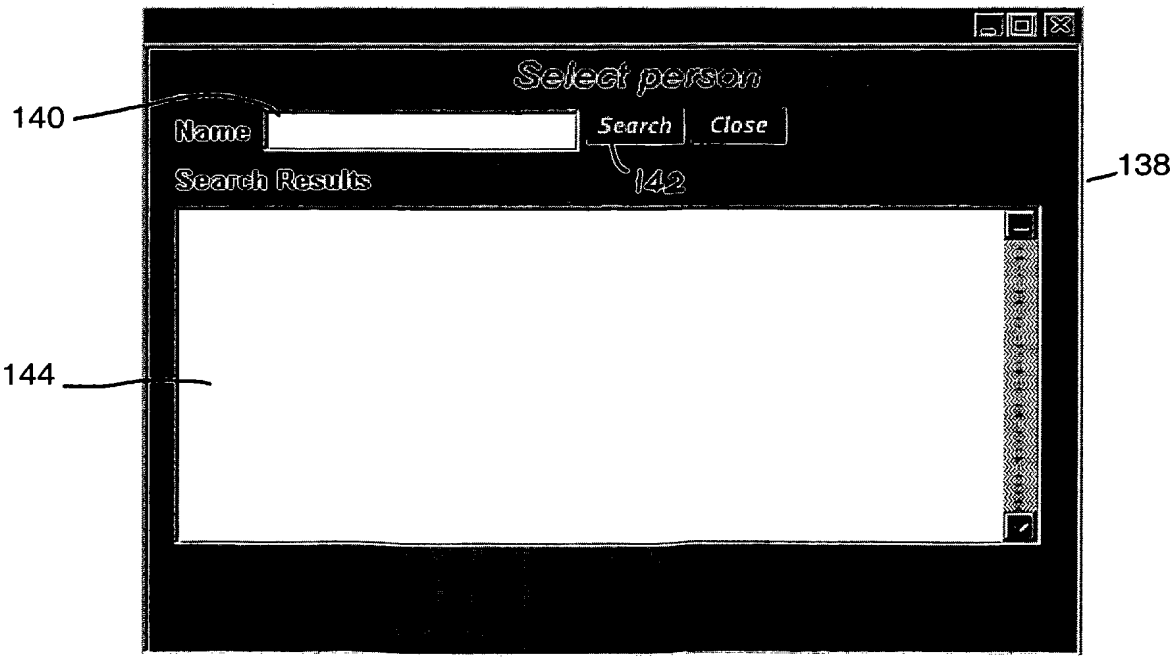
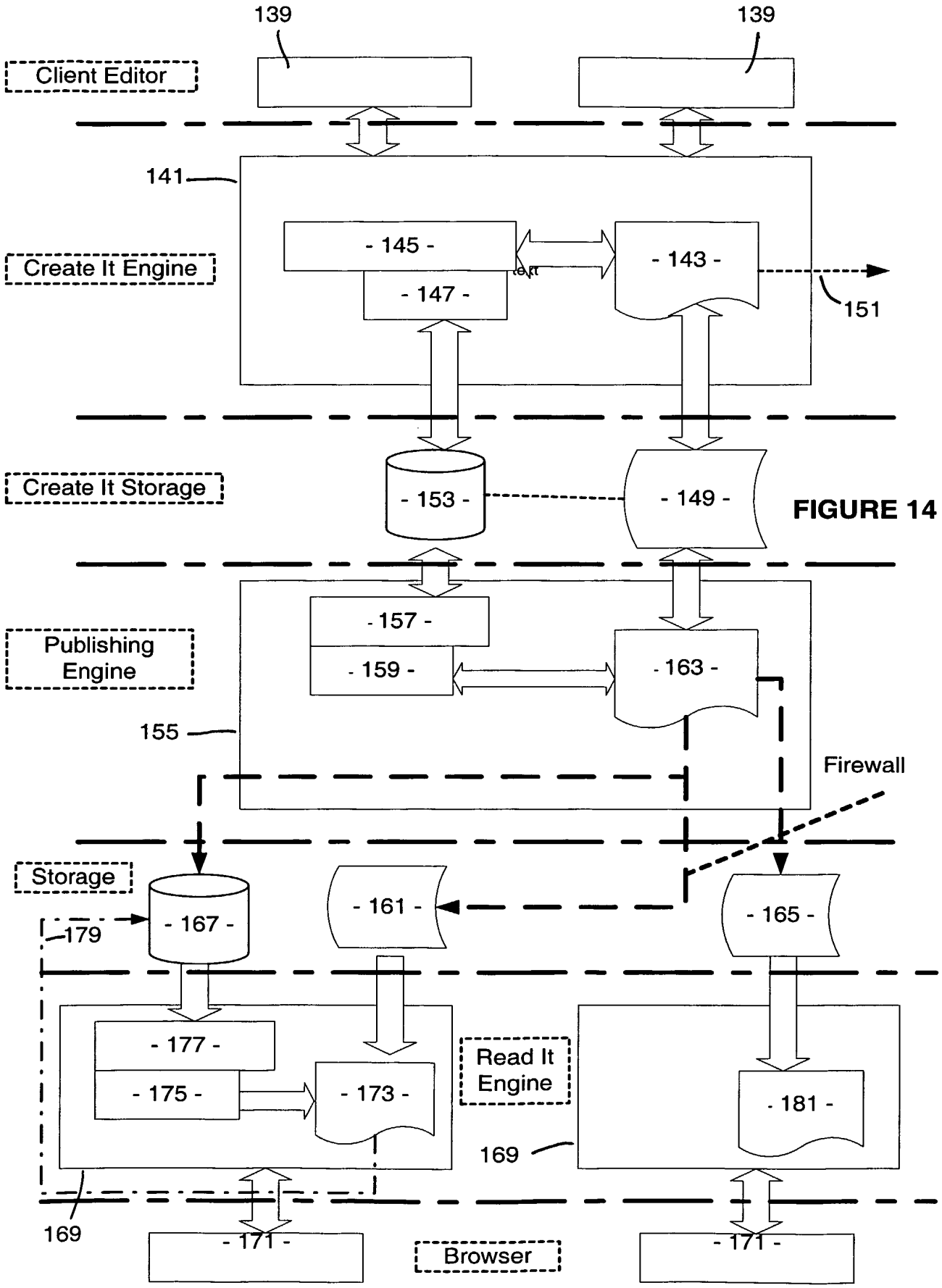


FIGURE 15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- 145 -
- 147 -
- 143 -
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Create It Storage
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- 149 -
- 157 -
- 159 -
- 163 -
Publishing Engine
155
Firewall
Storage
- 167 -
179
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- 165 -
- 177 -
- 175 -
- 173 -
Read It Engine
- 181 -
169
169
- 171 -
Browser
- 171 -

FIGURE 14

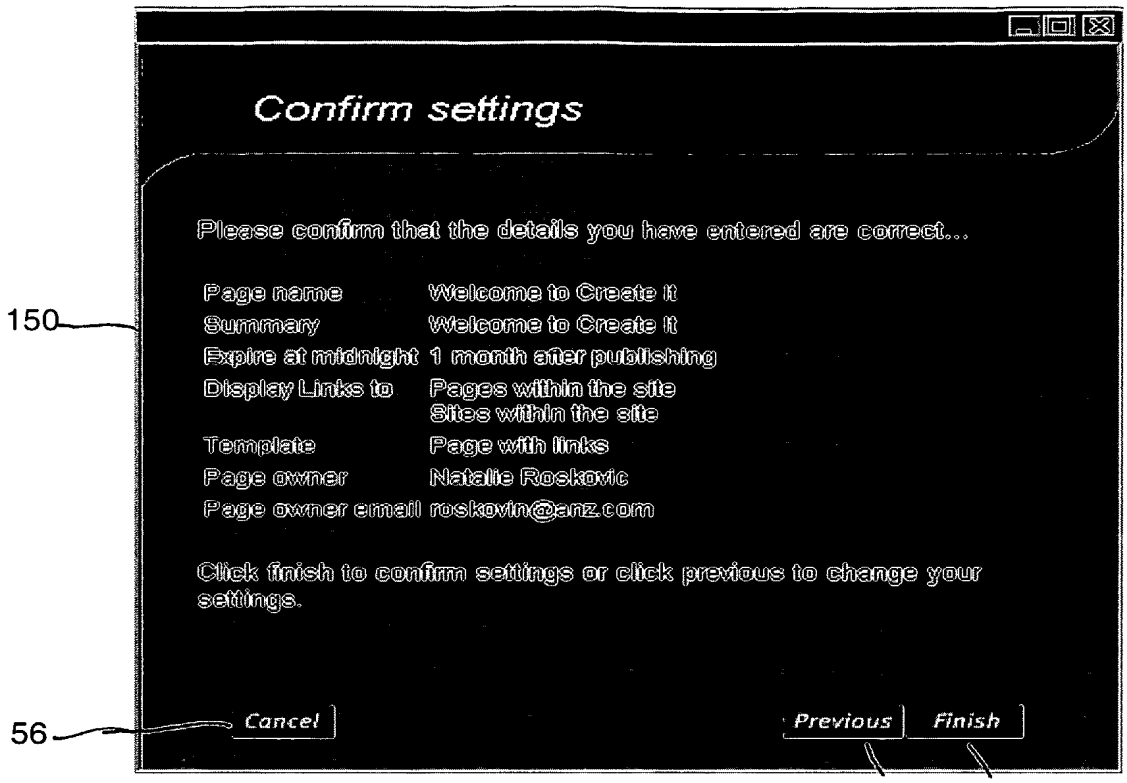


FIGURE 16

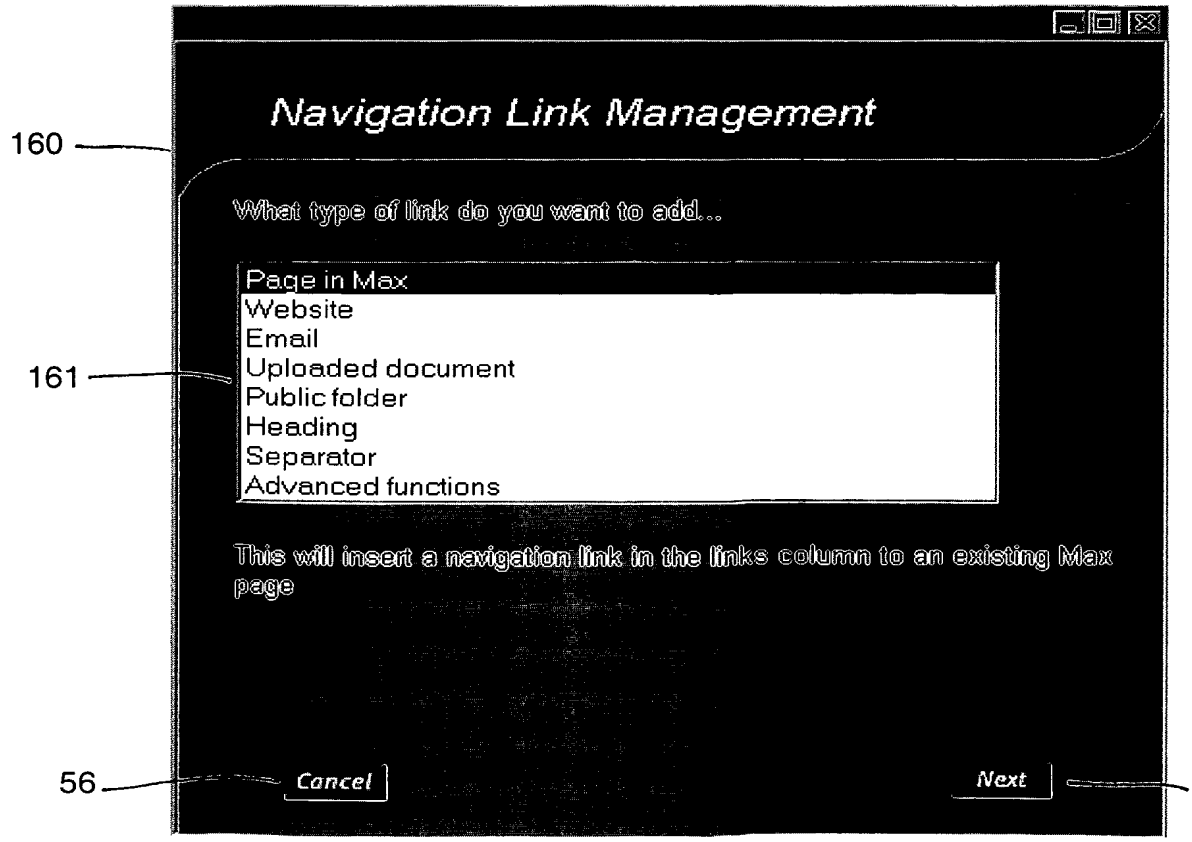
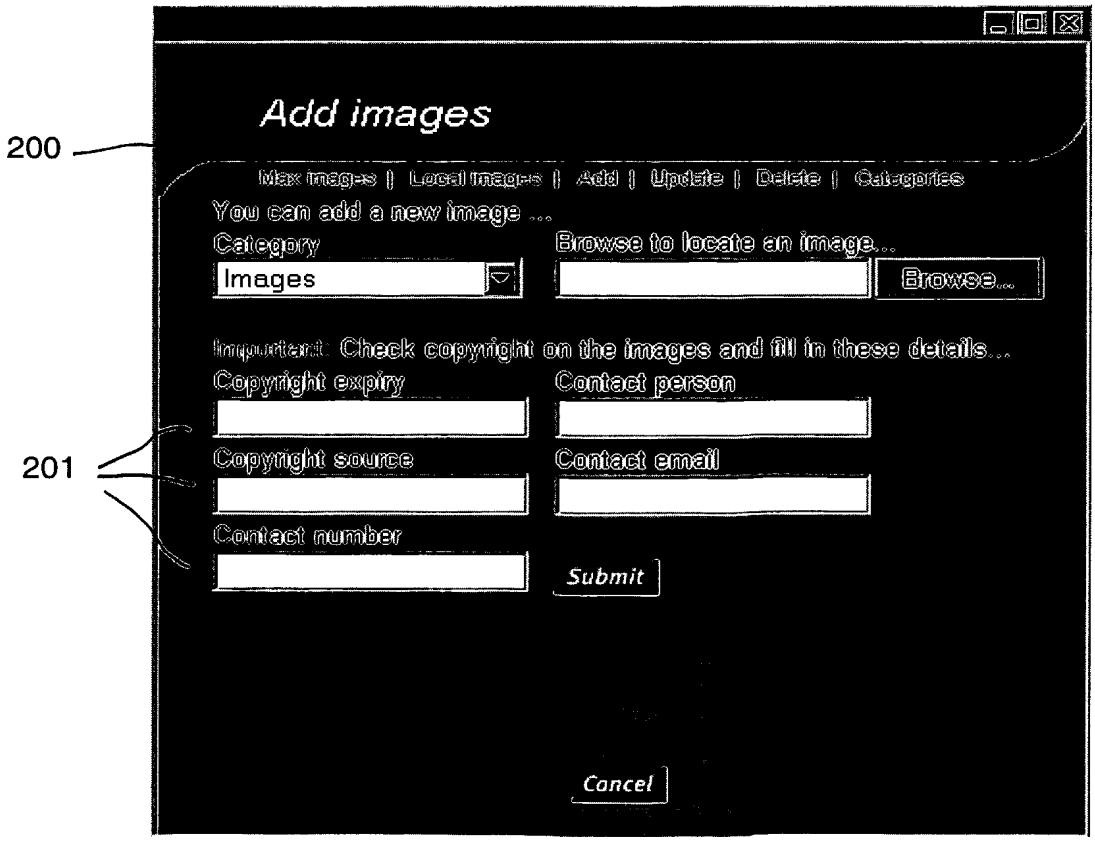


FIGURE 17

FIGURE 18



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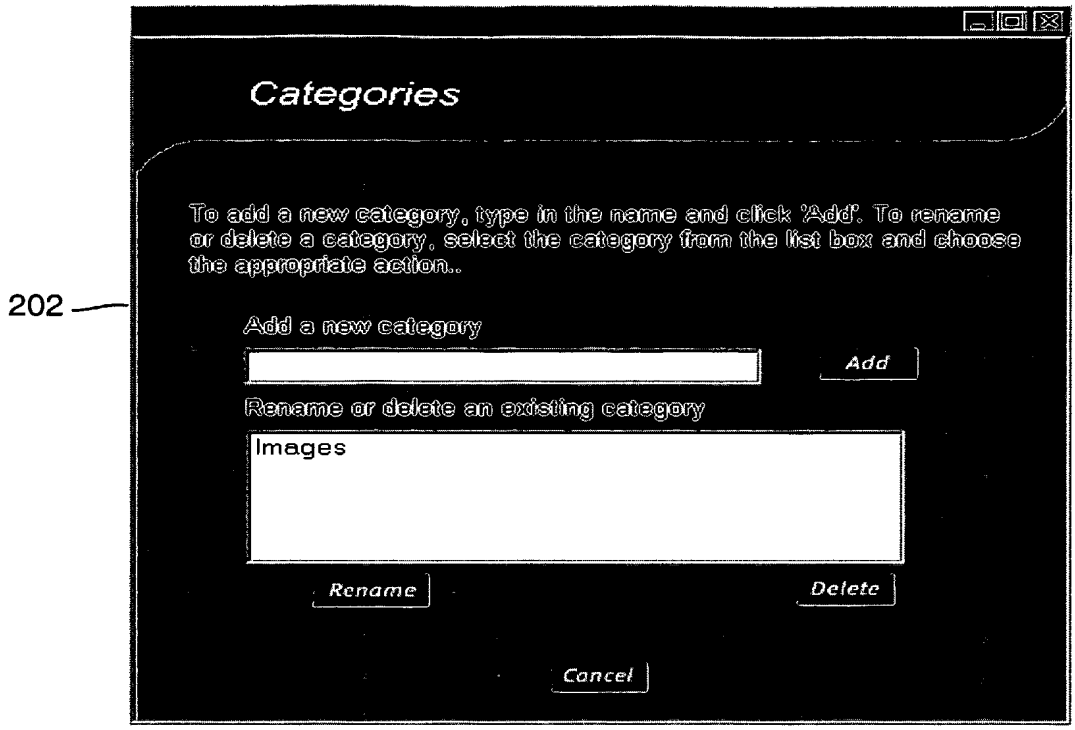


FIGURE 20

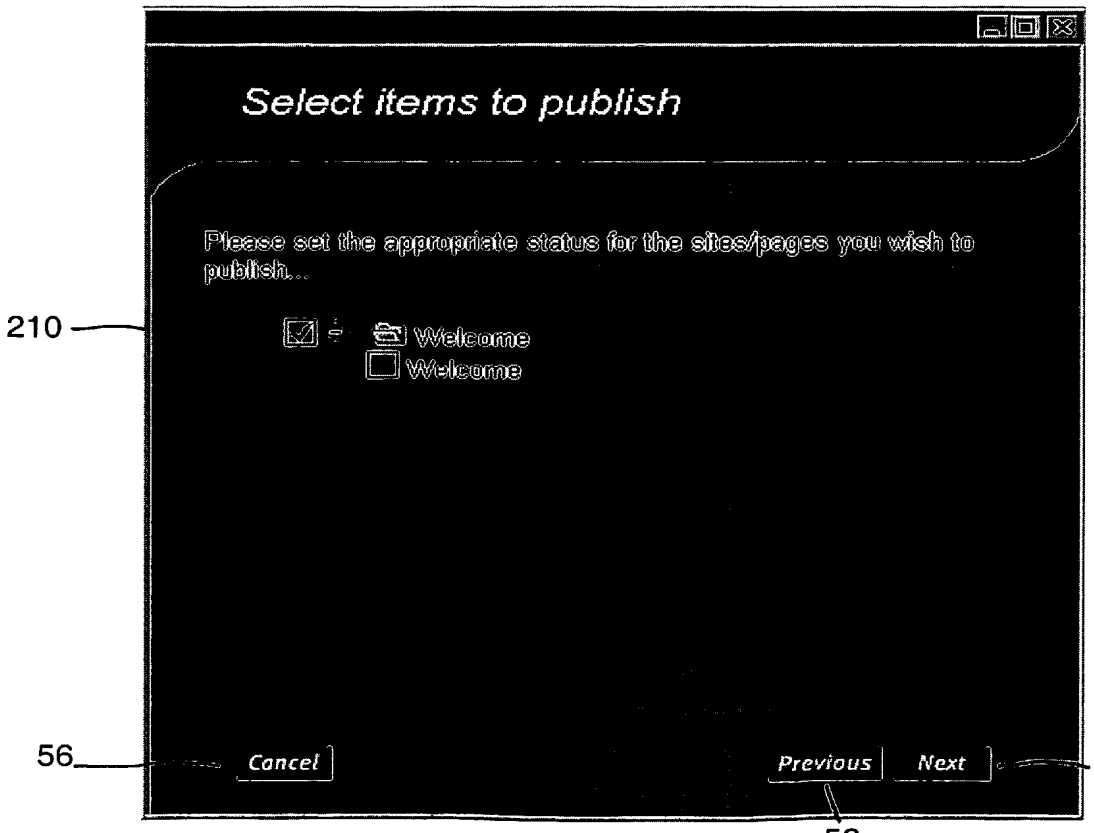
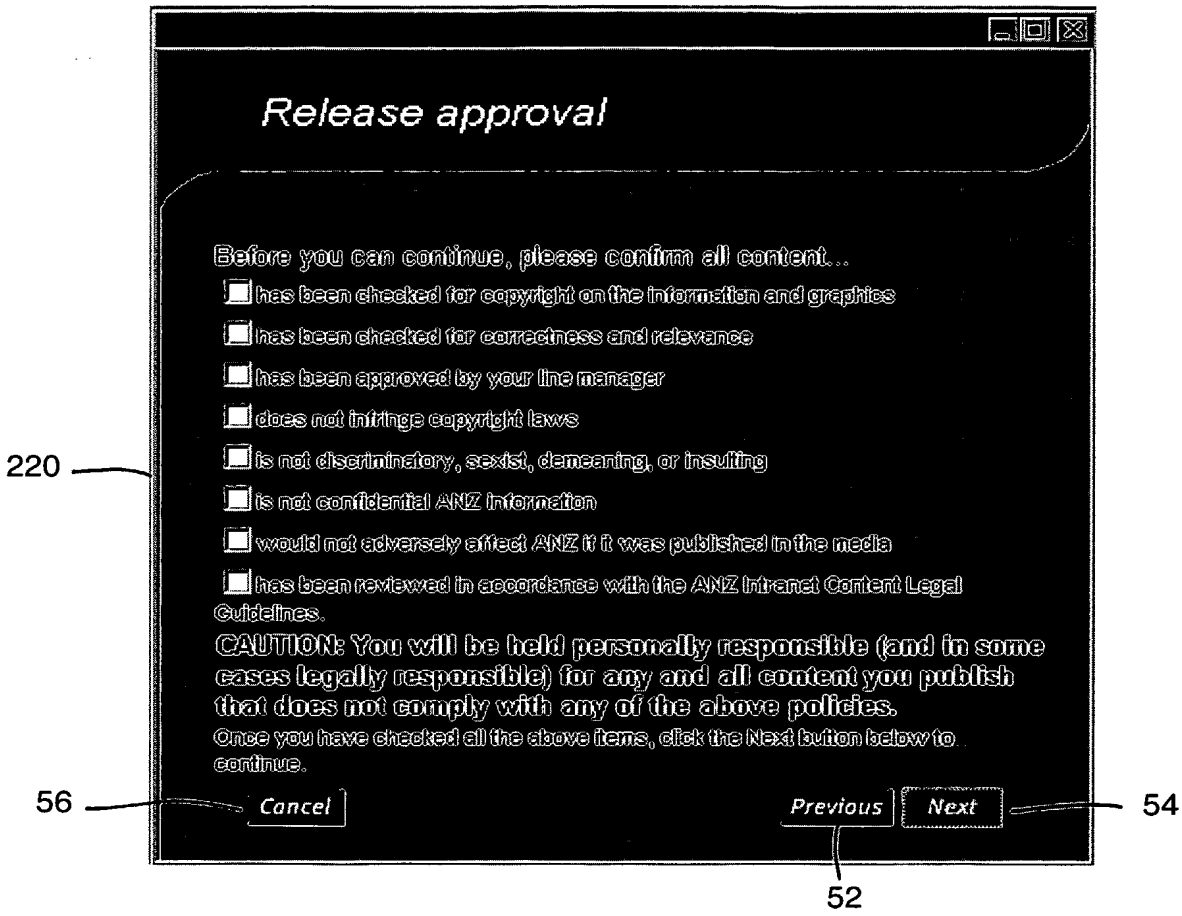


FIGURE 21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54
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FIGURE 22

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU01/01656

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. [7]: G06F 17/60 17/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPAT - Keywords: author, alter, approve, publish, collaborate, web and similar terms
Internet - Keywords "multiple web", servers, "RFC 2518"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	"An evaluation of the WebDAV extensions to the HTTP protocol" (NILSSON) January 2000. Master's Thesis, Lulea Tekniska Universitet, Section 3.4.1.2 Shared Resources	1-58
X	WO 00/72114 A (SCHOLARONE, INC.) 30 November 2000 Abstract; figures; page 1, line 33 - page 2, line 32	1-58
X	WO 00/57321 A (THE CYBERCASTERS LTD) 28 September 2000 Abstract; figures	1-58

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

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"&" document member of the same patent family

Date of the actual completion of the international search
5 February 2002

Date of mailing of the international search report
18 FEB 2002

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Facsimile No. (02) 6285 3929

Authorized officer

ROSEMARY LONGSTAFF
Telephone No : (02) 6283 2637

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU01/01656

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/48098 A (CARDEN JENNINGS PUBLISHING CO. LTD) 17 August 2000 Abstract; figures; claims	1-58
X	US 6088702 A (PLANTZ et al.) 11 July 2000 Abstract; figures; column 4, line 63 - column 5, line 22	1-58
X	US 6070175 A (MEZEI) 30 May 2000 Abstract; figures; claims	1-58
X	WO 00/08541 A (SILANIS TECHNOLOGY INC.) 17 February 2000 Abstract; figures; page 4, lines 1-15; page 10, lines 11-17	1-58
X	WO 99/66425 A (ATEX MEDIA SOLUTIONS, INC.) 23 December 1999 Abstract; figures; claims; page 20, lines 7-8	1-58

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU01/01656

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member			
WO	200072114	AU	200052818		
WO	200057321	AU	200039835	EP	1169681
WO	200048098	AU	200032268		
US	6088702	NONE			
US	6070175	NONE			
WO	200008541	AU	51444/99	EP	1101157
WO	9966425	AU	46891/99		

END OF ANNEX